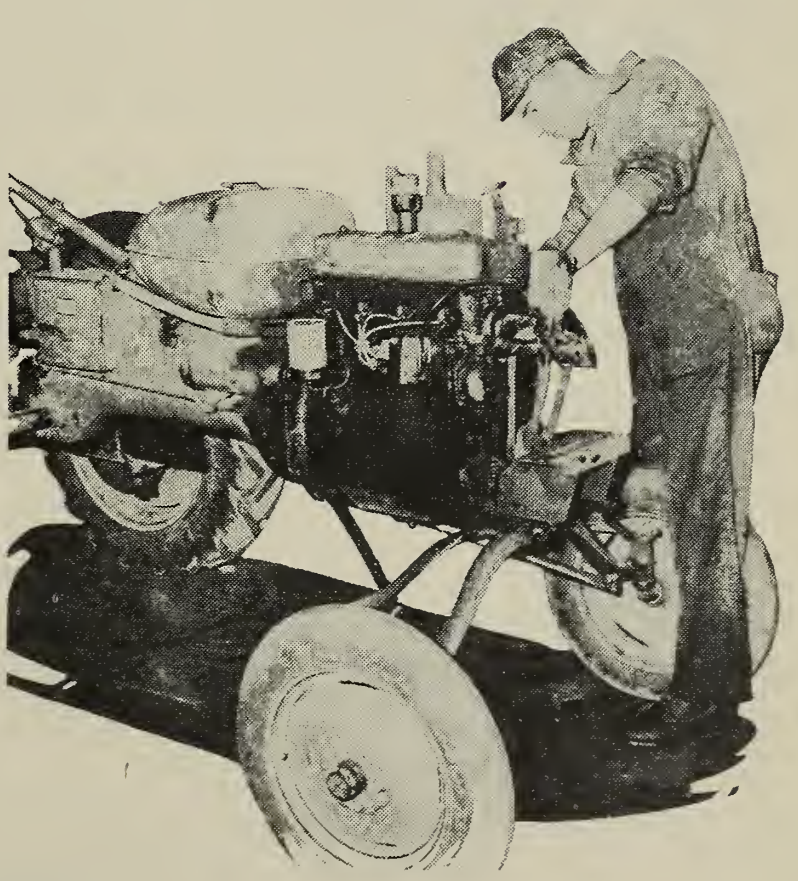
Repairing Machinery Cooperatively In Indiana

BY J. WARREN MATHER



COOPERATIVE RESEARCH AND SERVICE DIVISION
FARM CREDIT ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

MISCELLANEOUS REPORT 112 DECEMBER 1947

UNITED STATES DEPARTMENT OF AGRICULTURE
FARM CREDIT ADMINISTRATION
WASHINGTON 25, D. C.
I. W. DUGGAN, GOVERNOR

COOPERATIVE RESEARCH AND SERVICE DIVISION

HAROLD HEDGES, CHIEF JOSEPH G. KNAPP, ASSOCIATE CHIEF

CONTENTS

COPIES OF THIS PUBLICATION MAY BE HAD ON REQUEST
WHILE A SUPPLY IS AVAILABLE FROM THE
DIRECTOR OF INFORMATION AND EXTENSION
FARM CREDIT ADMINISTRATION
U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON 25, D. C.

SUGGESTIONS FOR ESTABLISHING AND OPERATING A COOPERATIVE FARM MACHINERY REPAIR SHOP

The following suggestions are based on the experience of the Indiana county co-ops:

1. *Acquire a suitable shop building in a good location.* The shop should adjoin the parts department of the implement building. It should be conveniently located for farmers with plenty or parking space and access to an alley, and, if possible, be near the co-op's other facilities. It should be at least 50 x 50 feet in size, be kept neat and clean, have plenty of light and large doors. It should have a room for painting machinery - equipped with an exhaust fan and constructed to meet fire regulations.

2. *Acquire adequate, modern shop equipment.* Good equipment will help give satisfactory service. Shops usually have acetylene and electric welders, power drills, bench grinders, drill presses, valve grinding and refacing equipment, a shop press, wheel pulling equipment, vises, chain hoists, jacks, an air compressor, work benches and miscellaneous tools. Implement departments generally have a pick-up truck and trailer which the shop can use. Probable cost to equip a new shop satisfactory at present prices - $2,500 to $3,000.

3. *Employ capable, trained personnel.* Skilled dependable, and honest mechanics are of the utmost importance. Good wages and welfare benefits help draw the best men available. Employees should attend all training schools sponsored by the State wholesale on the operation and repair of machinery.

4. *Specialize on tractor and farm implements.* Most shops recommend limiting work to tractors and farm implements. To make better use of mechanics' time during slack periods, certain types of farm equipment such as hay conveyors, dump carts, and trailers might be built in the shops.

5. *Insist on high quality, prompt, dependable work.* Mechanics must do good work, have confidence of patrons, and do only what needs to be done.

6. *Organize the shop to get 85 percent or more productive time.* Place the shop under direct supervision of a foreman who is also head mechanic. Make him responsible for directing the work of mechanics and for organizing work and booking jobs. Discourage farmers from using the shop to work on their machinery.

7. *Charge competitive rates for repair services and make the shop show a reasonable net savings.* The shop should be self-supporting and savings at end of the year refunded to patrons.

8. *Keep adequate shop records.* To accurately determine operating results it is necessary to keep separate operating statements on it. Other desirable records are daily income reports, productive time records of mechanics, and perpetual inventory records of parts.

9. Protect all equipment properly and train employees in accident and fire prevention.

10. Encourage farmers to book their repair jobs and order parts well ahead. This will allow the shop to make better use of its personnel and to give better service to patrons. Giving information to farmers on proper maintenance of farm machinery aids in leveling out peak loads of work.

11. Use the services of the State or regional cooperative wholesale. This organization can help plan, start, and equip shops, train mechanics, and give advice on sound operating practices.

SUMMARY AND CONCLUSIONS

Farmers in Indiana find their cooperative repair shops do a good job of keeping their farm machinery running. Looked at first in 1943, a second survey 4 years later of the repair service of the county associations of the Indiana Farm Bureau Cooperative Association, Inc., showed that these comparative newcomers to the agricultural cooperative field had learned how to do a better job year by year.

These cooperative repair shops have learned they must give dependable, high quality service at reasonable rates - rates which in many localities act as levers to hold down charges of other shops. Detailed information on 12 of these shops during the 1943-47 period showed that most of them made substantial progress considering the trying conditions of those years. Some shops enlarged and added equipment although finding suitable buildings and equipment were major difficulties. Most of them hired more competent personnel as they could find it, were forced to raise both wage rates and service charges, and found better ways of operating.

They are now in a good position to know what type of shop to build in the future, the kind of services to give, and type of mechanic needed. In addition to providing a more complete and well-rounded service to farmers, these repair services have increased the number of farmer contacts and the sale of various farm supplies. They have also developed good will and prestige for the State association, or wholesale, as the Indiana Farm Bureau Cooperative Association is usually called.

From the standpoint of the future, it appears that repairing farm machinery will become a well-established service of cooperatives in Indiana. Although the wartime shortages of farm machinery emphasized the need and encouraged the development of these shops, the rapid increase in use of tractors and mechanized equipment continues to make repairing work vital in farm operations. Since a number of cooperatives have operated shops successfully for many years, farmers will no doubt continue to look to them to provide this along with the many more well-established services.

With the development of a cooperative farm machinery manufacturing program and with an excellent wholesale service available, most county associations are planning to handle farm machinery as a major activity. They realize that good repair shops are fundamental in developing such a program and are prepared to make them successful.

Right here, however, a word of caution against over-expansion and mediocre service must be inserted. Competition in distribution and servicing farm machinery may become very keen. Under such conditions, cooperatives must realize their repair services have to be equal to or better than any others available. The importance of well-trained and well-paid shop employees in performing dependable and top quality service cannot be overemphasized. Furthermore, if farmers' incomes remain high and if farm machinery is plentiful, many farmers will probably prefer to trade in their old machine on a new one rather than have it overhauled. This would reduce the volume of work in the shop even

though trade-ins must be reconditioned for resale. What farmers do along this line will depend a great deal upon the educational work done by the cooperatives. If the associations can convince the farmers that usually only a small proportion of a farm implement wears out and that it is good business to overhaul such equipment as well as to purchase good reconditioned equipment, then the importance of repair shops will continue to increase.

In brief, these are some of the specific things found in a study of the operations of repair shops in the 4 years 1943-47.

The shops increased their equipment considerably. Three had between $3,000 and $4,000 worth of equipment each including air compressors and work benches but excluding parts bins, heating equipment, and implement trailers. Four had between $2,000 and $3,000 worth each, and four others had less than $2,000. This was in decided contrast to 1943 when the three largest shops each had only $1,000 to $2,000 worth of equipment. Most of the implement departments had acquired pick-up trucks and implement trailers which the shops could use. Mechanics mentioned other equipment they would like, most frequently pointing to shop presses, steam cleaners, lathes, and magneto equipment.

There had been one principal change in type of service - discontinuing repair work on farmers' trucks and automobiles. Thus, shops worked only on tractors and other farm machinery and association trucks. Only one shop rebuilt motors and only one built equipment such as hay conveyors and dump carts.

Shop rates for repair work increased about 33 percent during the 1943-47 period. In March 1947, two shops charged $1 an hour, 5 charged $1.50, 3 charged $1.75, and 1 charged $2. The average rate of 9 shops, excluding those doing mainly servicing work, was $1.64 an hour compared with $1.25 an hour in 1943. Only one shop had lowered its rate - from $2 to $1.75 an hour - during the period. Welding rates were usually $2.50 to $3 an hour, including materials.

When repair work was done out on the farm, the patron paid the regular rate from the time the mechanic left the shop until he returned. In addition, a 5-cents a mile rate both ways was usually charged.

These charges for repair work were generally about the same as those of other farm machinery dealers. At these rates, 9 of the 11 associations were able to pay a patronage refund on shop labor revenue at the same rate as they paid on sales of implements, repair parts, and other supplies.

One of the most serious problems the cooperative shops had during the period was acquiring and keeping skilled mechanics. Recently they have been able to hire more trained mechanics, although shop space still limited the number that could be used. In March 1947, one shop employed 6 mechanics, 2 employed 4 each, 2 employed 3 each, and 6 had either 1 or 2 mechanics each.

Wages of these mechanics increased substantially during the 4-year period. Shop foremen - head mechanics - received about 50 percent more in 1947 than in 1943 - in 6 shops employing 2 or more mechanics the foremen received from $46 to $76 a week (90 cents to $1.40 an hour) including overtime, while in 1943 their wages generally ranged from $30 to $35 a week. Wages paid other mechanics generally ranged from $40 to $48 a week (80 cents to 95 cents an hour) including overtime, or about 66 percent more than the $25 to $30 a week paid in 1943.

In most shops mechanics worked from 50 to 54 hours a week and in 7 associations the wage scale was set up on the basis of time and one-half for time worked over 40 hours a week.

Some associations began to pay more attention to welfare benefits for their employees, paying a portion of their premiums for life and retirement insurance.

The shops have found they must be properly organized to be successful. They need to keep records of work done and inventories of repair parts. They must also set up a system to tell what percent of the mechanics' time is actually producing revenue for the shops. It was generally agreed that 85 percent productive time was a good goal as at least 75 percent of the mechanics' time must be revenue producing if the shops are to break even.

Training programs for implement and servicemen of county associations showed improvements. The Indiana Farm Bureau Cooperative Association now holds seasonal schools of one-day duration in each district rather than State schools of several days duration. In this way, men are trained and get information on a particular machine just prior to the time they will be working on this machine.

The State association was in a much better position to serve the county associations than it had been 4 years previously. It has more space, a new repair shop, and has increased its fieldmen from 1 to 3. In addition to the training schools and other educational work, the State association helps plan shops, locate equipment and mechanics, and find the best sources of supply for repair parts and accessories.

The repair shops continued to have one major weakness - keeping adequate records. But even in this they showed some improvement over 1943. Nine associations listed shop labor revenue as a separate item under "service income" or "other income" in their operating statements. Only 2 associations, however, showed sales of repair parts separate from those of farm machinery. None of the associations surveyed prepared separate operating statements on their shops, but 2 prepared such statements on their combined implement and shop department and several others were considering it. One association was keeping a daily report on its shop operations and one was keeping such a report on its implement and shop department.

REPAIRING MACHINERY COOPERATIVELY IN INDIANA

By

J. Warren Mather
Agricultural Economist

Indiana was one of the leading States in setting up a cooperative farm machinery repair service. Delegates of county cooperative associations attending the 1943 annual meeting of their State association started the ball rolling a little faster on co-op repair service for farm machinery. The war had brought shortages of both machines and manpower to the farms and it was necessary that all existing equipment be kept in working order. So these delegates adopted a resolution that each county association set up a repair shop during the year if possible. The experiences of 17 associations which already had shops operating served as the basis for this recommendation. At that time 12 others were also installing repair shops. The delegates also felt that a well-established repair service would be of great value in developing a farm machinery distribution program after the war.

Shortly after this the implement department of the Indiana Farm Bureau Cooperative Association, Inc., asked the Cooperative Research and Service Division of the Farm Credit Administration to make a study of 10 typical farm machinery shops of county associations.[1] Main purpose of the first study was to get information to help those associations planning to install shops as well as those already operating.

In 1947, the State association suggested that a follow-up survey be made of the repair shops to see what progress and changes had been made since 1943 and to see if improvements from their experiences could be applied to all shops.

Nine of the 10 shops originally surveyed in 1943 plus two others were therefore studied in 1947. See figure 1. Six of the 11 had been in operation before the war. Approximately one day was spent at each association interviewing shop mechanics, implement and repair department managers, and county association general managers and bookkeepers. A small amount of current information was later obtained by mail. Emphasis was placed on obtaining data regarding the present status and changes in types of services rendered, kinds and amount of shop equipment, service rates, mechanics' pay, operating records, assistance from the State wholesale, and operating policies and practices which had proved to be sound as well as those which should be avoided.

[1]Mather, J. Warren. Cooperative Farm Machinery Repair Services in Indiana. Farm Credit Administration W.C. 10. 26 pp. Illus., 1943. For further general information on cooperative distribution and conservation of farm machinery, see: Francis, G. M. Distribution of Machinery by Farmers Cooperative Associations. Farm Credit Administration Circular C-125. 57 pp. Illus., 1941. Francis, G. M. How Purchasing Cooperatives are Conserving Farm Equipment. Farm Credit Administration Misc. Report 58. 21 pp. 1942.

NOTE: The author wishes to express appreciation to the managers and employees of the county cooperative associations visited for their cooperation in connection with this study. Acknowledgment for valuable suggestions and assistance is made to Ralph O. Brown, Manager, and to Carl K. Edwards, Leonard Endres, and Ward F. Hopkins, Fieldmen, of the Implement Department of the Indiana Farm Bureau Cooperative Association, Inc., and to Joseph G. Knapp and John H. Lister, Purchasing Section, Cooperative Research and Service Division, Farm Credit Administration. Appreciation is also expressed to Florence Fountain of this Division for stenographic assistance.

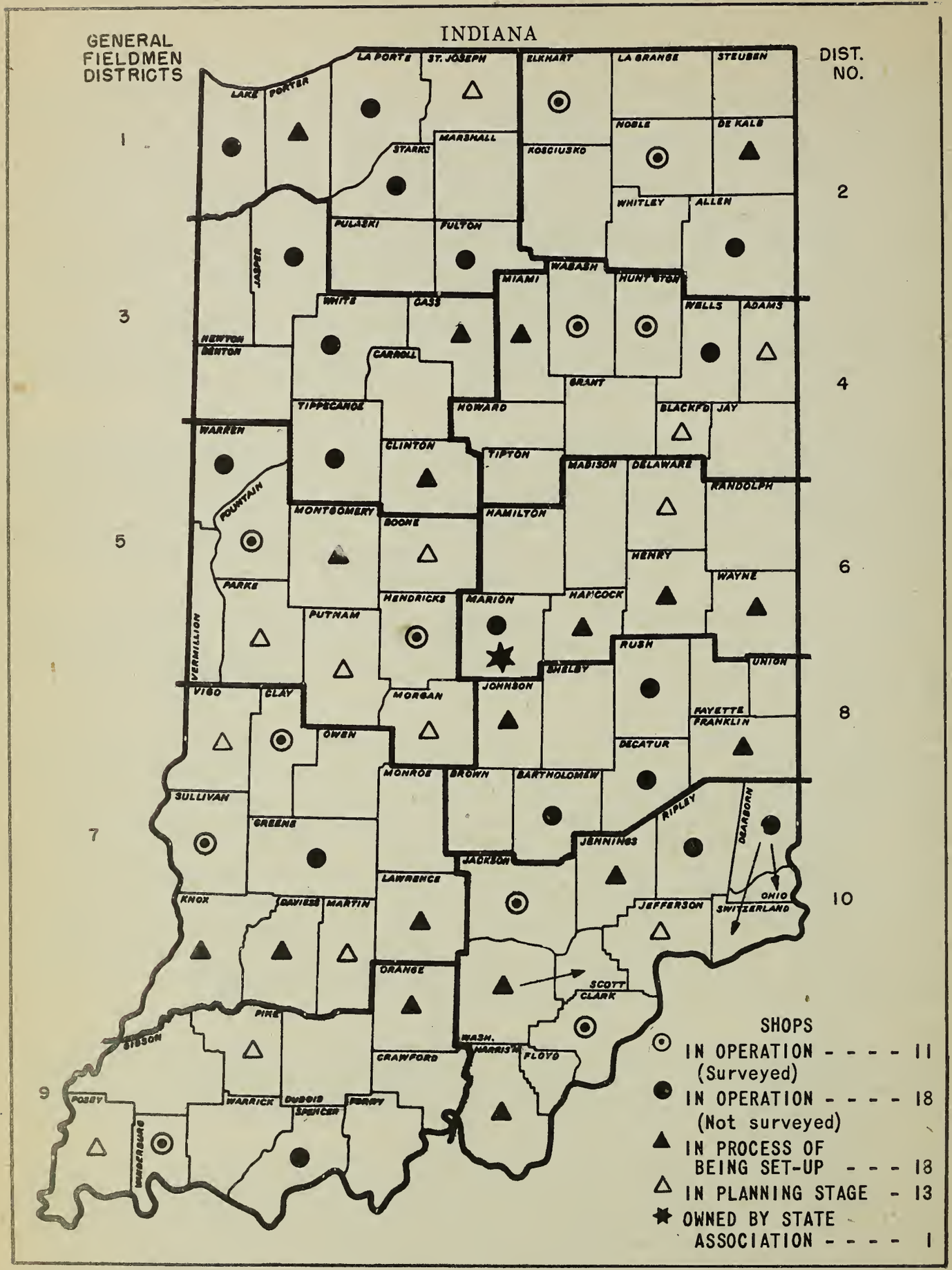


Figure 1. - Status of farm machinery repair shops of county cooperative associations in Indiana, March 1947

The county cooperative associations in Indiana included in this survey were:

Elkhart County Farm Bureau Cooperative Association, Inc..... Goshen
Noble County Cooperative Association, Inc..... Albion
Huntington County Farm Bureau Cooperative Association, Inc... Huntington
Wabash County Farm Bureau Cooperative Association, Inc..... Wabash
Fountain County Farm Bureau Cooperative Association, Inc.... Veedersburg
Hendricks County Farm Bureau Cooperative Association, Inc..... Danville
Clay County Farm Bureau Cooperative Association, Inc..... Brazil
Sullivan County Farm Bureau Cooperative Association, Inc..... Sullivan
Jackson County Farm Bureau Cooperative Association, Inc..... Seymour
Clark County Farm Bureau Cooperative Association, Inc.... Jeffersonville
Vanderburgh County Farm Bureau Cooperative Association, Inc.. Evansville

NEED FOR COOPERATIVE FARM MACHINERY REPAIR SHOPS

INCREASED MECHANIZATION OF AGRICULTURE

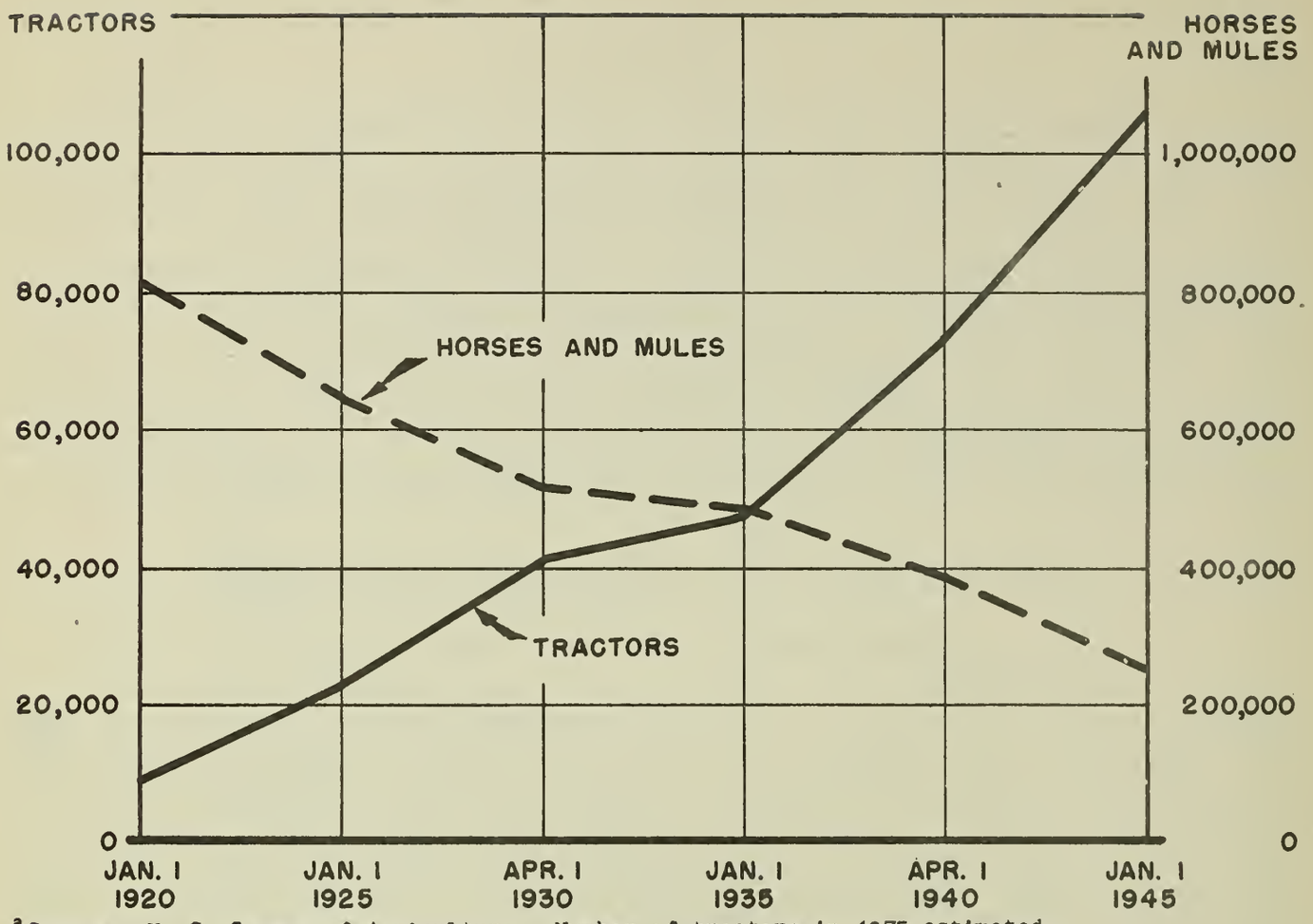
Indiana farms have become largely mechanized during the last quarter of a century. The number of tractors on farms increased from 9,230 on January 1, 1920, to 105,263 on January 1, 1945, while the number of horses and mules declined from 817,591 to 266,233 during this period. See table 1 and figure 2. Approximately 51 percent of all farms had tractors in 1945, some had two, and a few operated three or more. Thus there were 60 tractors per 100 farms compared with 4 per 100 farms 25 years earlier.

The shortage of farm labor and high wage rates during World War II caused a rapid displacement of horses and mules by tractors in order to use such equipment as combines and corn pickers. In spite of wartime

Table 1. - Tractors and horses and mules on Indiana farms, 1920-45[a]

ITEM	JAN. 1 1945	APR. 1 1940	APR. 1 1930	JAN. 1 1920
Tractors on farms	105,263	73,221	41,979	9,230
Farms reporting tractors	[b]89,458	68,447	40,402	8,871
Total farms in State	175,970	184,549	181,570	205,126
Percent of all farms with tractors	50.8	37.1	22.3	4.3
Tractors per 100 farms	60	40	23	4
Farms of 30 or more acres	138,322	148,009	(c)	(c)
Tractors per 100 farms of 30 or more acres[d]	76	49	-	-
Horses and mules on farms[e]	266,233	395,095	521,261	817,591

[a]Source: U. S. Census of Agriculture, 1945.
[b]Farms reporting 1 tractor = 76,231; 2 tractors = 11,370; and 3 or more tractors = 1,857 farms.
[c]Data not available.
[d]Not entirely accurate because the total number of tractors in the State was divided by the number of farms of 30 acres or more in size.
[e]Includes colts and ponies.



[a]Source: U. S. Census of Agriculture. Number of tractors in 1935 estimated.

Figure 2. - Number of tractors and horses and mules on farms in Indiana, 1920-45[a]

restrictions on the manufacture of farm machinery, the number of tractors on Indiana farms increased 43.8 percent from 1940 to 1945, while the horse and mule numbers in the State declined 32.5 percent during this period. See table 2.

This change in motive power during the last 25 years, of course, brought about many changes in farm equipment. Tractor plows replaced horse-drawn walking plows and all tillage equipment has been redesigned to stand the shocks of higher speeds. Grain combines are fast taking over the work of grain binders and threshing machines and mechanical corn pickers are rapidly replacing corn binders. Farms are becoming equipped with various other types of labor-saving equipment, much of it operated by the farm tractor. Examples are pick-up hay balers, tractor-mounted manure loaders, and grain and hay loaders. Consequently, the oldtime blacksmith shops, which once dotted rural communities and did the repair work on farm equipment and the shoeing of horses and mules as well as serving as community discussion centers, have practically been displaced by farm machinery repair shops.

The large investment which farmers have in all types of farm machinery, including tractors, indicates the importance of adequate repair services. See table 3. The value of all implements and machinery on Indiana

Table 2. - Farms and tractors on farms in 11 Indiana counties and in the State, January 1, 1945[a]

COUNTY	TOTAL FARMS	TRACTORS ON FARMS	FARMS REPORTING TRACTORS	PERCENT OF FARMS WITH TRACTORS	TRACTORS PER 100 FARMS	FARMS OF 30 OR MORE ACRES	TRACTORS PER 100 FARMS OF 30 OR MORE ACRES[b]
Elkhart.....	3,046	1,610	1,452	47.7	53	2,324	69
Noble.....	2,126	1,392	1,256	59.1	65	1,816	77
Huntington...	2,138	1,716	1,459	68.2	80	1,782	96
Wabash.....	2,097	1,571	1,338	63.8	75	1,709	92
Fountain.....	1,502	1,267	973	64.8	84	1,277	99
Hendricks....	2,328	1,663	1,406	60.4	71	1,781	93
Clay.....	2,100	949	818	39.0	45	1,452	65
Sullivan.....	2,208	977	797	36.1	44	1,542	63
Jackson.....	2,238	993	877	39.2	44	1,766	56
Clark.....	1,889	688	627	33.2	36	1,432	48
Vanderburgh..	1,554	831	690	44.4	53	932	89
Total.....	23,226	13,657	11,693	-	-	17,813	-
Average....	2,111	1,242	1,063	50.3	59	1,619	77
State total..	175,970	105,263	89,458	-	-	138,322	-
Average[c]...	1,913	1,144	972	50.8	60	1,504	76

[a]Source: U. S. Census of Agriculture, 1945.
[b]Not entirely accurate because the actual number of tractors on farms of various size groups was not available. The total number of tractors on all farms was therefore divided by the number of farms of 30 acres or more in size.
[c]Ninety-two counties.

farms on January 1, 1945 was $182,474,899, or $1,328 per farm reporting compared with $106,511,659, or $681 per reporting farm in 1940. Farm expenditures for such items in 1939 totaled $19,621,377, or an average of $396 per reporting farm. Such an increase in farm machinery during a period when our production facilities were largely devoted to producing war equipment poses the question as to whether machinery maintenance and repair services have been keeping pace with production and distribution programs. Many farmers in the past have been able to do some ordinary repairing. With more complicated machinery, however, the need for expert repair services has increased. A well-equipped shop within reasonable distance of a farm is especially desirable when breakdowns occur during harvest.

Table 2 gives some idea of the tractors to be serviced in the 11 counties in which shops were surveyed. There were 13,657 tractors in these counties on January 1, 1945 - an average of 1,242 per county and 59 per 100 farms. The range was from 1,716 tractors in Huntington County to 688 in Clark County. Fountain County had the largest number of tractors per 100 farms with 84, while Clark was low with 36. Table 3 shows that farms in these 11 counties valued their farm machinery at

Table 3. - Value of implements and machinery on farms January 1, 1945 in 11 Indiana counties and for the State[a]

COUNTY	IMPLEMENTS AND MACHINERY ON FARMS JANUARY 1, 1945		
	VALUE[b]	FARMS REPORTING	VALUE PER FARM REPORTING
Elkhart	$2,564,625	2,461	$1,042
Noble	2,484,316	1,806	1,376
Huntington	2,912,690	1,777	1,639
Wabash	2,849,772	1,674	1,702
Fountain	2,170,993	1,188	1,827
Hendricks	2,786,959	1,778	1,567
Clay	1,407,771	1,417	993
Sullivan	1,501,251	1,547	970
Jackson	1,922,209	1,744	1,102
Clark	1,160,313	1,553	747
Vanderburgh	1,273,652	1,279	996
Total	$23,034,551	18,224	-
Average	$2,094,050	1,657	$1,264
State total	$182,474,899	137,449	-
Average[c]	$1,983,423	1,494	$1,328

[a]Source: U. S. Census of Agriculture, 1945.
[b]Automobiles excluded in 1945 but not in prior years.
[c]Ninety-two counties.

$23,034,551 in 1945. This was an average of $2,094,050 per county and $1,264 per farm reporting. Farm expenditures for machinery in the 11 counties in 1939 totaled $2,447,137, an average of $222,467 per county and $386 per farm reporting.

DEVELOPMENT OF COOPERATIVE FARM MACHINERY PROGRAM

Several county cooperative associations in Indiana began supplying farm tractors and equipment to their members in the early 1930's. By 1940, most of the 86 county associations in the State had sold some farm machinery and tractors, but a fairly complete machinery distribution program in cooperation with the State association had been developed in only about half of them.[2] Four of the 11 associations surveyed began handling machinery in the 1930-34 period and 5 began from 1935 to 1939. See table 4.

In the beginning, county associations purchased equipment either direct from leading manufacturers or through the wholesale implement department of the Indiana Farm Bureau Cooperative Association, Inc. The State

[2]Francis, G. M. Distribution of Machinery by Farmers Cooperative Association. Farm Credit Administration Circular C-125. 57 pp. Illus., 1941. p. 34.

Table 4. - Dates that 11 cooperative associations in Indiana began handling farm machinery and establishing repair shops.

COUNTY ASSOCIATION	YEAR ASSOCIATION BEGAN HANDLING FARM MACHINERY	YEAR REPAIR SHOP ESTABLISHED
Elkhart	1933	1933
Noble	1934	1942
Huntington	1939	1942
Wabash	1930	1934[a]
Fountain	1939	1945
Hendricks	1942	1943
Clay	1933	1940
Sullivan	1936	1943
Jackson	1932	1942
Clark	1936	1943[b]
Vanderburgh	1936	1938

[a]Somewhat limited service until 1942.
[b]Somewhat limited service until 1943.

association in 1934 became one of the first wholesales to arrange with a manufacturer of general farm machinery for cooperative wholesale and retail distribution throughout an entire State.[3] It was forced, however, to change suppliers from time to time and for 5 years it participated with other regionals in assembling co-op tractors under contract with private firms. It became apparent from these experiences that the only way the cooperatives could have a dependable known source of supply was to own their own production facilities. The National Farm Machinery Cooperative, Inc., was therefore organized in 1940 by a number of wholesale cooperatives. It has plants at Bellevue, Ohio and Shelbyville, Ind., and produces much of the equipment distributed by member associations. In addition, it makes contracts with other manufacturers for its Co-op tractors and for some machinery. The Indiana State wholesale also makes contracts direct with local manufacturers for a small amount of equipment.

Some asspciations have developed a fairly large farm machinery business, while others make it only a small part of their operations. Many were retarded by the war and by lack of facilities. A number are planning to construct new implement buildings when they feel that costs are more reasonable.

The volume of farm machinery and repair parts and total farm supplies sold in 1942 and 1946 by the county associations surveyed is shown in table 5. Volume is expected to be substantially higher when the production

[3]Francis, G. M. Cooperative Purchasing by Indiana Farmers. Farm Credit Administration Bul., 38. 84 pp. Illus., 1939. p. 29.

Table 5. - Farm machinery and repair parts sales and total farm supply sales of 11 cooperative associations in Indiana for fiscal years ending in 1942 and 1946

COUNTY ASSOCIATION	FARM MACHINERY AND REPAIR PARTS SALES[a]		TOTAL FARM SUPPLY SALES	
	1942	1946	1942	1946
Elkhart.....	$82,503	$88,007	$495,943	[b]$1,673,262
Noble.....	62,917	36,645	336,361	[b]632,016
Huntington....	32,121	62,115	267,407	642,045
Wabash.....	83,249	98,373	497,529	[b] [c]833,517
Fountain.....	23,643	[d]65,961	248,020	[b]720,699
Hendricks.....	14,137	22,414	314,959	348,235
Clay.....	50,490	50,095	484,569	989,596
Sullivan.....	26,927	33,602	293,510	431,423
Jackson.....	7,000	50,838	264,395	[b]601,532
Clark.....	18,500	31,287	258,591	[b]377,870
Vanderburgh...	[e]59,126	[e]97,320	[e]409,031	[e]617,760
Total.....	$460,613	$636,657	$3,870,315	$7,867,955
Average.....	$41,874	$57,878	$351,847	$715,269

[a]Estimated for 6 associations in 1942 and for 2 in 1946 where shop labor income was included with machinery and parts sales.
[b]Excludes chicks, poults, and eggs.
[c]For an 11-month period due to change of fiscal year.
[d]Includes about $5,000 worth of tires.
[e]Includes sales of the original Tri-County Farm Bureau Cooperative Association in 1942 and for the first 5 months of 1946, and sales of the Vanderburgh County Farm Bureau Cooperative Association (after division) for the last 7 months of 1946.

of machinery again becomes plentiful. These associations each serve an entire county. They handle a wide variety of farm supplies and equipment, of which the most important are feed, seed, fertilizer, petroleum products, farm machinery, building supplies, and farm and home appliances. Most of them are strong financially and should be in a good position to develop an efficient farm machinery distribution and servicing program on a county-wide basis.

Most of the associations did not set up a repair shop until a few years after they began handling machinery - at first providing only one man to service the equipment sold. As this equipment became older and more farm machinery was distributed, the demand for repair services by the cooperatives naturally increased. The cooperatives then began to install shops which could perform ordinary tractor and implement overhauling jobs. As in other cooperative enterprises, the object was to perform a dependable high grade repair service for farmers at reasonable cost. By March 1943, there were 17 shops in operation and 12 others in the process of being installed. Most of the shops which were surveyed at that time had been established from 2 to 7 years after the association began handling farm machinery. See table 4. Eight of the 11 were started after 1939.

When the war brought curtailment and uncertainty of farm machinery production, Indiana cooperatives saw they could help keep equipment operating until new machinery became available by establishing repair shops. As mentioned, the State association encouraged such a program. By March 1947, there were 29 shops in operation, 18 others were being set up, and 13 more were in the planning stage. See figure 1. In starting new shops back during the war period, however, three major obstacles were encountered: Obtaining a suitable place in which to operate the shop, acquiring necessary shop equipment, and employing trained mechanics. These problems will be discussed in detail in later sections of the report.

Experience of cooperative associations has shown that a sound farm machinery distribution program ultimately depends upon carrying a full line of parts and providing a high grade repair service for the equipment handled. Besides serving farmers, repair shops are definitely needed to recondition used machinery acquired as "trade-ins" by the implement department. Furthermore, in addition to protecting the farmers' investment in machinery, repair shops strengthen cooperative distribution programs and this helps protect the cooperatives' investment in machinery production facilities. Still another benefit from successful shops is that they help build business for all departments of the county cooperatives by bringing in new patrons to get repair work done, many of whom then begin to purchase farm supplies cooperatively.

Following are some comments of general managers and implement department managers regarding the reasons for and values of rendering farm machinery repair services:

> "A profitable farm machinery business needs a service shop adequately equipped to overhaul or rebuild any machine which is sold or which is acquired as a trade-in."

> "The foundations of many successful implement businesses have been laid in repair shops which started in a small way."

"Our repair shop rendered a very valuable service to farmers during the war period and at the same time helped to offset the loss of revenue from reduced sales of implements and tractors in the implement department."

"A good shop will help develop a farm machinery business as it is more convenient to repair and service machinery where the repair parts are stocked."

"A necessary part of a good machinery business is a complete stock of repair parts arranged so that they can be found quickly and conveniently. A good parts service and repair shop will increase implement sales."

"In addition to being a necessary phase of the implement business, a high quality repair service will increase the number of farmer contacts and develop good will and prestige for the cooperative association."

As in the case of other cooperative services, farmers expect to get dependable, high quality work done at reasonable cost by their cooperative shops. Following are some statements obtained from farmers with respect to this subject:

"Farmers should establish cooperatively-owned shops to assure receiving dependable repair service at reasonable cost."

"We feel that it is logical to have our own repair shop to help protect our large investment in farm machinery."

"We are increasingly using more highly mechanized equipment. We need to bring it into a well-equipped shop to be serviced and checked over periodically, and we can best guarantee a dependable service through establishing our own shops."

"The number of tractors, farm implements, trucks, and automobiles which farmers own certainly justify our cooperative association in providing a high-class repair department for servicing them."

"Only by setting up our own shop can we be certain of maintaining a repair service operated in the interest of the user of farm machinery."

TYPES OF SERVICES RENDERED

The main type of service performed by the shops surveyed was overhauling and repairing farm tractors and implements. Little change in types of service occurred during the last 4 years, except that truck and automobile repair work for farmers was practically discontinued. Several shops, however, acquired additional equipment and were able to perform better or more specialized services with respect to motor and magneto work.

GENERAL FARM MACHINERY REPAIR WORK

Tractors were the principal type of equipment overhauled for farmers although all kinds of farm implements were serviced in the shops. See figures 3 and 4. The type of work performed in the different shops depended to some extent upon the equipment that could be obtained during the war period. Practically all did valve and ring work, welding, brake lining, and all ordinary overhauling work that came to them, but only one shop rebuilt motors.

The State association does not recommend that individual shops do highly specialized work such as reboring motors, grinding crankshafts, and rebuilding magnetos. This type work takes especially trained mechanics and costly equipment and in most cases their volume would not warrantsuch an investment. Theimplement department of the State associaciation has an exchange arrangement with county associations to perform such work in its well-equipped central shop. Here it can be performed more economically because of the greater volume.

For instance, if a county co-op shop receives a tractor from a farmer for complete overhauling, the mechanic first checks the motor and then the cylinder to see whether or not a re-ring job will take care of it. If the motor needs to be rebored and rebuilt, he can call the State implement department which will immediately ship out a rebuilt motor carrying a new motor guarantee. The county cooperative will in turn ship the old motor to the State department's shop. The central shop will charge the county the cost of rebuilding this motor which will then be available for exchange with any county unit. Under such a plan, the county co-ops can obtain a rebuilt motor by the time they have completed the other overhaul work on the tractor.

Figure 3. - Overhauling the rear-end of a tractor.

Practically all repair work was done in the shops although mechanics performed emergency repair work on farms upon call. Some shops had portable welding outfits for such work. Each either had or planned to get trucks and trailers for hauling tractors and implements from farms to the shops. Farmers were encouraged, however, to drive their tractors into the shop if possible, as mechanics could do repair work more satisfactorily and with less loss of time, especially when extra parts or tools were required.

None of the shops had considered a mobile shop or unit equipped to completely overhaul tractors on the farm. While they had given such a

plan little consideration, they questioned whether the rather large extra investment could be justified, and if the time lost in traveling between jobs and getting into fields would require charging excessive service rates. Fieldmen of the State association knew of only one locality in Indiana where an individual performed regular overhauling of tractors on farms with a mobile shop.

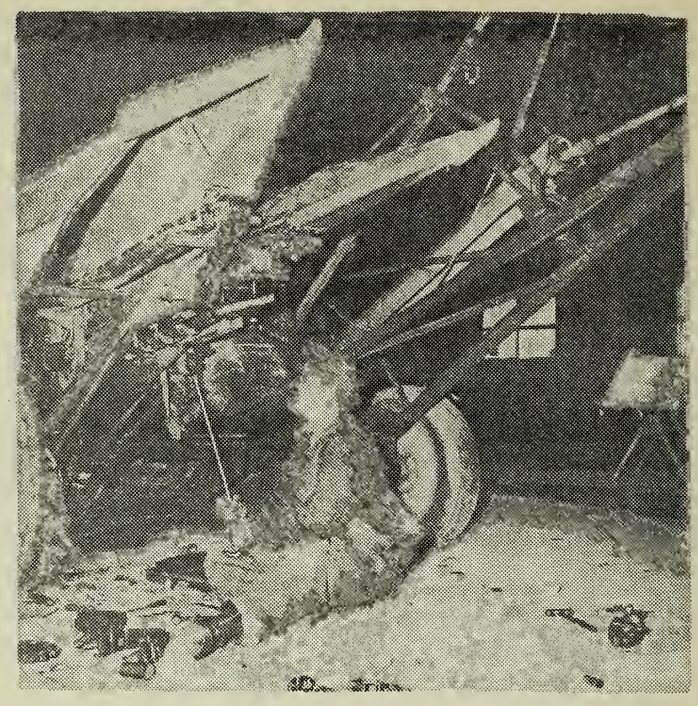


Figure 4. - Removing a sprocket and chain from a corn picker.

Rebuilding and reconditioning used machinery acquired as "trade-ins" by the implement departments was an important type of work performed. However, the amount of such work has been rather small the last 4 years because of the shortage of new machinery which could be sold on the basis of making allowances for used machinery. It is the policy of the association to paint rebuilt machinery before selling it, but some do not yet have satisfactory painting facilities.

Reconditioning used machinery for resale was considered an important function of the repair shops and implement departments for the following reasons: (1) it enabled the shops to make more efficient use of labor during the slack periods of work; (2) it helped the implement department show much better financial results on its used machinery operations; and (3) it aided farmers in purchasing dependable second-hand equipment.

ASSEMBLING AND SERVICING NEW MACHINERY AND MISCELLANEOUS EQUIPMENT

Mechanics in all shops helped set up new farm machinery whenever they had time. As the implement departments expand, a field serviceman will probably handle most of the adjusting and servicing of new machinery sold by each association.

Some shops had one man who installed and serviced water systems and milking machines and repaired miscellaneous equipment such as electric motors, hot water heaters, washing machines, and gasoline engines, During the wartime shortage of farm machinery, the implement salesman of one association devoted much of his time to installing water systems, while in another, the serviceman for miscellaneous equipment also helped set up and service new farm machinery. Those associations, however, with a considerable volume of miscellaneous farm equipment and electrical appliances had a separate "modernization" or "farm and home appliance" department and maintained a separate repair shop for servicing these items.

REPAIRING TRUCKS AND AUTOMOBILES

All shops overhauled and repaired trucks owned by the cooperative associations. The number of trucks generally ranged from 3 to 18 per association. The shops generally did not repair trucks or automobiles owned by farmers because of the demand for and importance of keeping farm machinery in working order and because of the lack of shop facilities and mechanics. Those shops which were doing such work in 1943, with the exception of one which formerly operated as a garage, had discontinued it. They did not find it satisfactory to do both car and tractor work in the same shop nor to use the same mechanics on both types of work.

There was a difference of opinion among the managers and shop men, however, as to the advisability of performing a regular repair service for trucks and automobiles of farmers in the same shop where tractors and implements are repaired. Most of them were opposed for the following reasons: (1) it takes a different set of machines for each type of work as few like to work on both tractors and automobiles or have the experience to do good work on both; (2) special equipment is needed for automobile work; and (3) separate shops are needed especially if body and fender work is done.

Other managers and mechanics believed that repairing cars and trucks as well as farm machinery would permit more effective use of the mechanic's time and of the shop and equipment. They felt that a good mechanic could perform satisfactory work on both types of equipment. Most employees believed, however, that if work was to be done on cars and trucks the shop should be partitioned off or a separate shop provided, especially if body and fender work was to be performed.

BUILDING FARM EQUIPMENT

Only one shop was building miscellaneous kinds of farm equipment. The Noble County association builds such equipment as hay and grain conveyors,

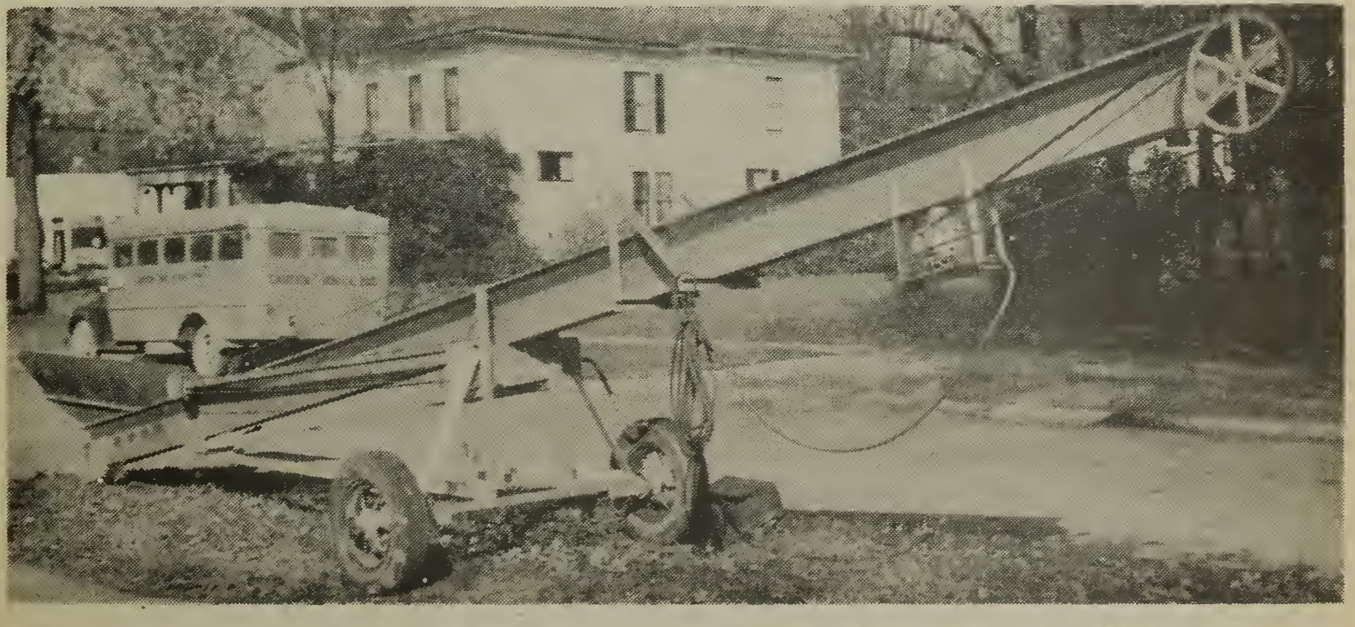


Figure 5. - A grain and hay conveyor built by the shop of the cooperative in Noble County.

dump carts, milk can carts, ensilage carts, trailers, wagons, saw manvils to mount on tractors, and peat moss grinders for farmers. It built 20 conveyors in 1946. See figure 5.

The shop of the Howard County association, discontinued within the past 4 years, formerly built trailers, metal hog troughs, bull rakes, and wagons, until the acute steel shortage and the heavy demand for machinery repair services during the war forced it to stop this line of activity.

MISCELLANEOUS SERVICES

Other mechanical services by some shops included sharpening plowshares, welding steel points on plowshares, painting tractors and machinery, and battery charging.

During the war the shops and implement departments helped farmers locate used machinery for purchase or rental. Some associations tried to place new machinery in communities where farmers would agree to cooperate in using it. One organization sponsored a county-wide auction for used farm machinery. All cooperated in the aluminum and scrap metal drives sponsored by the Government.

EDUCATIONAL WORK WITH FARMERS

The cooperative shops and implement departments sponsored and helped with various programs during the war which were designed to assist farmers in operation, care, and conservation of farm machinery and to avoid peak loads of work in the shops. Farmers were encouraged to check over their tractors and other machinery in the fall and early winter and to order repair parts and book their tractors and implements for overhauling as early as possible. They were reminded of the importance of such planning at various meetings and by personal contacts, postcards, and short articles in local newspapers as well as in the "Farm News" - a monthly paper published jointly by the county cooperative associations and the Indiana Farm Bureau Cooperative Association, Inc.

One of the most worthwhile educational programs carried on by the county associations during the war were schools for farmers on the care and conservation of their farm machinery. The schools were generally sponsored jointly by the implement departments of the county associations and the State association. Whenever possible, they were held in the shops of the county cooperatives where machinery was being repaired. The State association furnished an experienced mechanic to lead discussions and provided equipment for demonstration purposes. Some of the topics discussed were the fundamental causes of tractor trouble, the care and cleaning of oil filters, air cleaners, and carburetors, and proper setting and adjustment of plow hitches. In fact, information was given on any phase of operation which would help prevent large major overhaul jobs resulting from negligence and improper care. Also, safety precautions in operating machines by farmers were stressed at all meetings. While it is impossible to measure the benefits of such meetings, the cooperatives felt they were worthwhile and many of the farmers attending also expressed their approval.

Cooperative associations also worked with the county agents by urging farmers to attend the various farm machinery schools sponsored by the Extension Service. In two counties, mechanics assisted in night classes of repair schools for farmers and high school students, which were sponsored by local vocational agricultural teachers.

SHOP BUILDINGS

Size and types of repair shop buildings varied considerably. See table 6. They ranged in size from approximately 400 to 5,040 square feet of floor space and they accommodated from one to six mechanics. Shops of associations in Elkhart, Hendricks, Sullivan, Jackson, and Clark Counties were located in rooms partitioned off or adjoining the main farm supply warehouses. See figure 6. Shops in Huntington, Wabash, and Fountain Counties were located in the rear of their implement buildings while those in Noble, Vanderburgh, and Clay Counties were housed in separate shop buildings.

With the exception of the new shop in Wabash County, the shop buildings and their size and arrangement as found in 1947 cannot be used as satisfactory guides or standards for other associations. This is

Table 6. - Approximate size of repair shops, parts rooms, and machinery display, storage and assembly rooms in March 1947

COUNTY ASSOCIATION	REPAIR SHOP			PARTS ROOM		MACHINERY DISPLAY, STORAGE, AND ASSEMBLY ROOM	
	SIZE	FLOOR SPACE	MECHANICS EMPLOYED	SIZE	FLOOR SPACE	SIZE	FLOOR SPACE
	Feet	*Sq. Ft.*	*No.*	*Feet*	*Sq. Ft.*	*Feet*	*Sq. Ft.*
Elkhart.....	46 x 60	[a]2,760	4	20 x 20	400	20 x 20 35 x 40	[b]1,800
Noble.....	30 x 50	1,500	4	15 x 30	450	*Use shop*	
Huntington...	30 x 32	960	3	12 x 18	216	40 x 62 30 x 40	[c]3,680
Wabash.....	60 x 84	5,040	6	18 x 44	792	35 x 50 57 x 63	[d]5,341
Fountain.....	27 x 54	1,458	[e]1	12 x 30	360	30 x 30 15 x 54	[b]1,710
Hendricks....	30 x 50	1,500	[f]1	15 x 30	450	*Use shop*	
Clay.....	20 x 30	600	1	15 x 30	450	30 x 40 40 x 90	[g]4,800
Sullivan.....	20 x 20	400	1	10 x 10	100	*Use shop*	
Jackson.....	40 x 48	1,920	3	20 x 40	800	*Use shop*	
Clark.....	15 x 30	450	1	10 x 20	200	20 x 30	600
Vanderburgh..	50 x 60	3,000	3	28 x 60	1,680	28 x 60 28 x 60	[b]3,360

[a] Size of shop when remodeling completed.
[b] Smaller room adjoins end of larger one
[c] Large space on second floor of garage which has a large elevator. This space cannot be utilized as well as if it were on ground level.
[d] The small room is for display and office.
[e] A second mechanic will be employed in the near future.
[f] Shop also is used by serviceman for water systems and other equipment.
[g] Small room is for general hardware and merchandise.

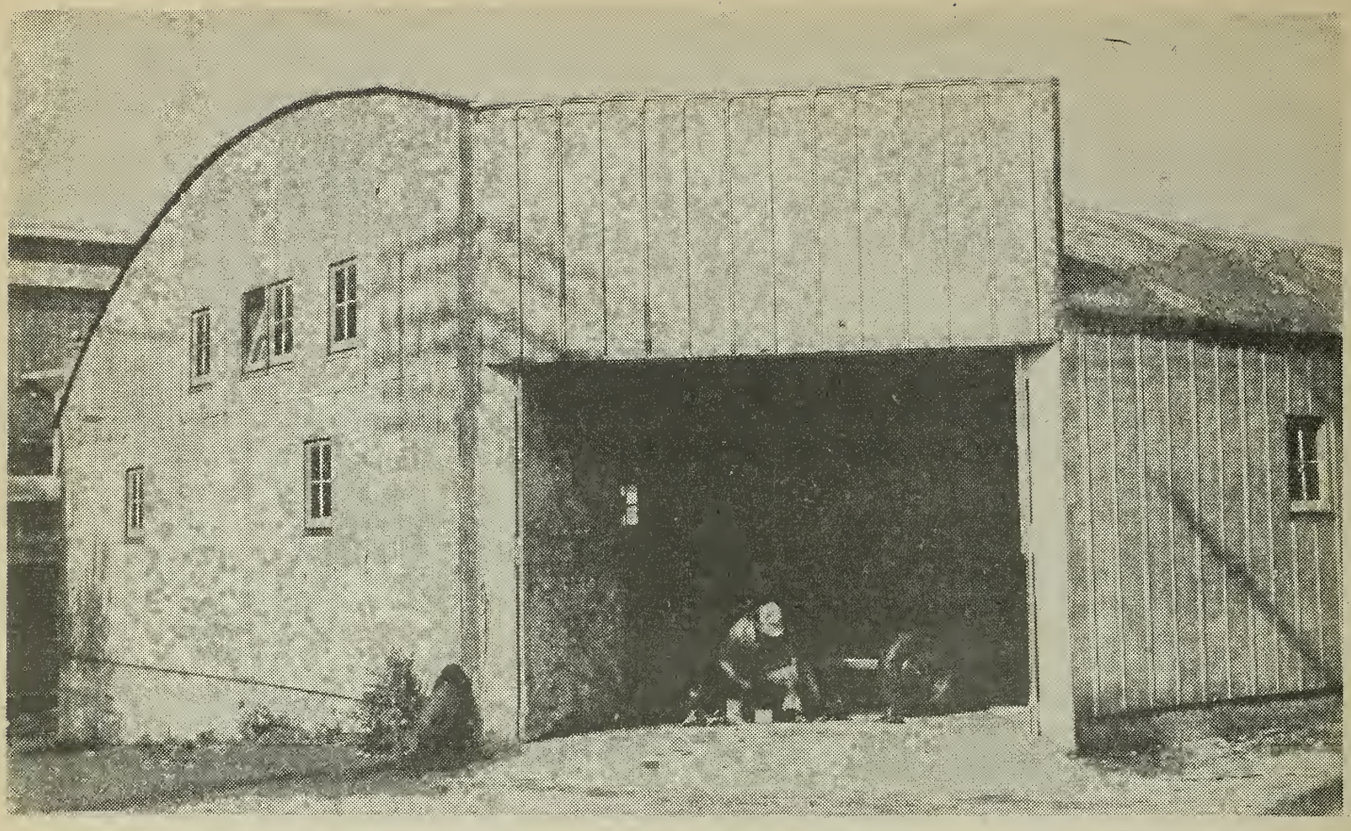


Figure 6. - Implement building and shop of the cooperative in Elkhart County.

because a number of the shops were established on a small scale just prior to or during the war and had to find quarters in existing warehouses or in implement display or storage rooms not needed during the wartime shortage in farm machinery. Also, most shops are too small at present. Some with only one mechanic plan to add more personnel when they get a larger shop and their volume of machinery increases. In fact, obtaining shop space at all during the war was a problem as materials to construct a new building were difficult to obtain and, in most cases, there were no existing shops or buildings that could be purchased. Some associations, however, were able to buy an automobile garage with a sales room that was available because of the shortage of new cars and the difficulty of maintaining a staff of mechanics.

While the number of mechanics employed by the shops has increased since March 1943, only 3 have enlarged their shop facilities. The Elkhart County association started its shop and implement department in one end of the warehouse and employed 2 mechanics. In 1944, it erected an adjoining building, which provided a shop 30 x 46 feet. See figure 6. In the fall of 1946, 4 mechanics were employed and the implement department had taken over the entire building. At that time the co-op was also making plans for a shop 46 x 60 feet and a parts and display room 40 x 55 feet. Because there is still a shortage of storage, assembling, and parking space, an implement and shop building may be built in the future on 2 lots near the present facilities.

During the last 4 years, the Huntington County association moved its shop from a small implement display room into a separate implement building which had formerly been a garage. This building has a second

story which can be used for storage and painting. This building is not very satisfactory, however, and the manager would like to eventually put up a new implement building and shop near the edge of the city. Three mechanics are employed now, compared with one in 1943.

Wabash County in 1943 had a shop about 18 x 50 feet in one side of its implement building and employed 2 mechanics. In the fall of 1946, a new shop building 60 x 84 feet was being completed at a cost of approximately $8,500. The shop has 4 stalls for tractors, 1 for general implements, and 1 for trucks. This shop varied its arrangement from the usual pattern by installing work benches at right angles to the end of the shop so that they separate the mechanics and provide stalls in which each mechanic is to work. The shop has a paint room partitioned off in one corner, a wash room curtained off, and a boiler room. The steam furnace from the implement building was used to heat both it and the shop. The addition of the new shop permitted raarrangement of the implement building to provide for a more adequare parts and display room. A diagram of the layout is shown in figure 7.

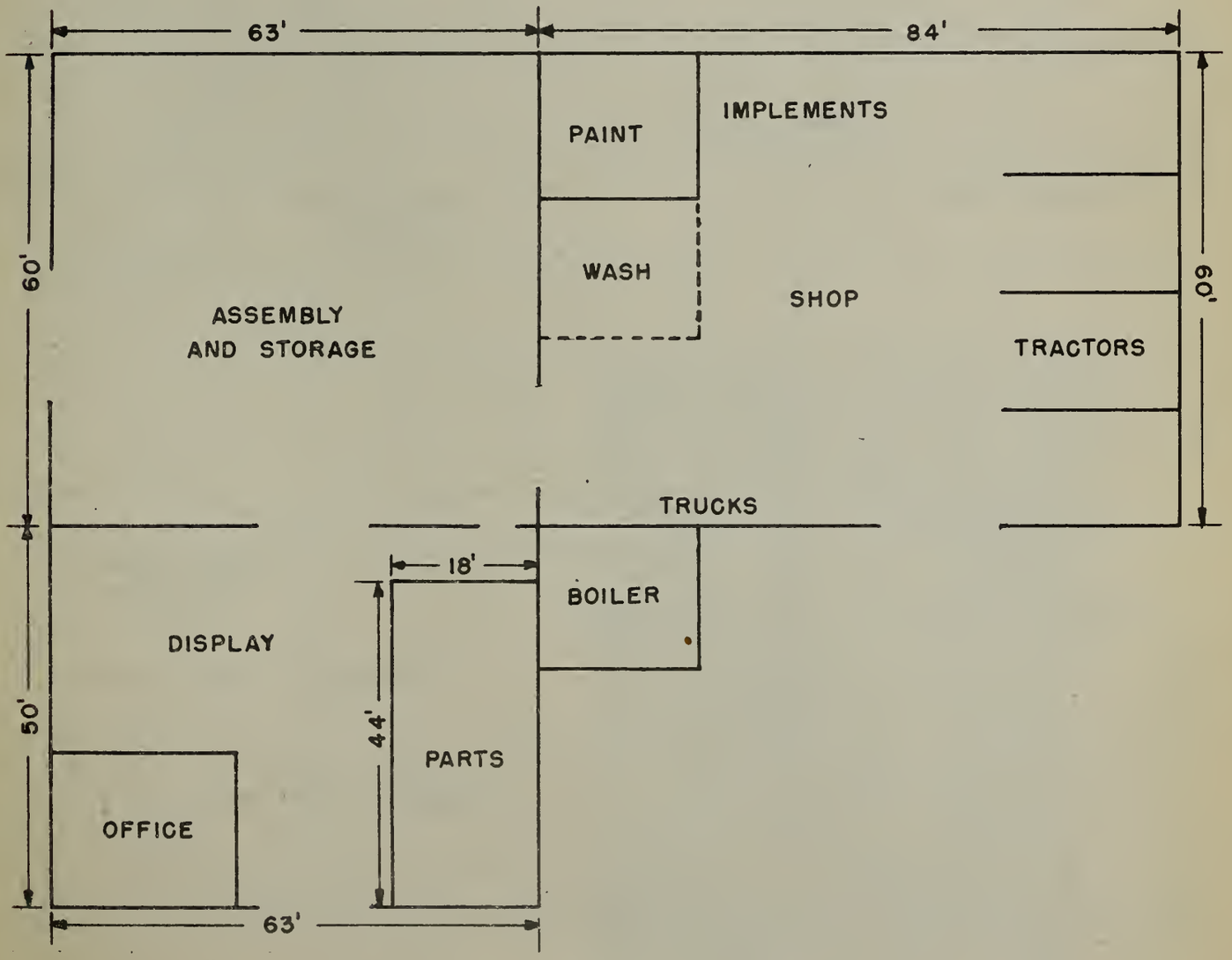


Figure 7. - Floor plan of implement building and repair shop of Wabash County Farm Bureau Co-operative Association, March 1947.

Although not included in this study, the Clinton County Farm Bureau Cooperative Association, Frankfort, Ind., had started construction of a large implement-shop-and-hatchery building. See figure 8. It will be located directly across the street from the present facilities.

The manager of one successful association stated that he would like to obtain 2 or 3 acres of ground with plenty of parking space on which to erect a new implement and shop building. He would plan to have 5 mechanics and a shop foreman with at least 2 of the mechanics capable of welding. He would have a set-up and delivery man and an implement department manager. He felt that the implement program may eventually become a ten-man department in that association.

In planning for new implement buildings and shops, managers generally believed the following points should be considered:

1. The shop should be a part of the implement building, preferably adjoining the rear of the parts department.

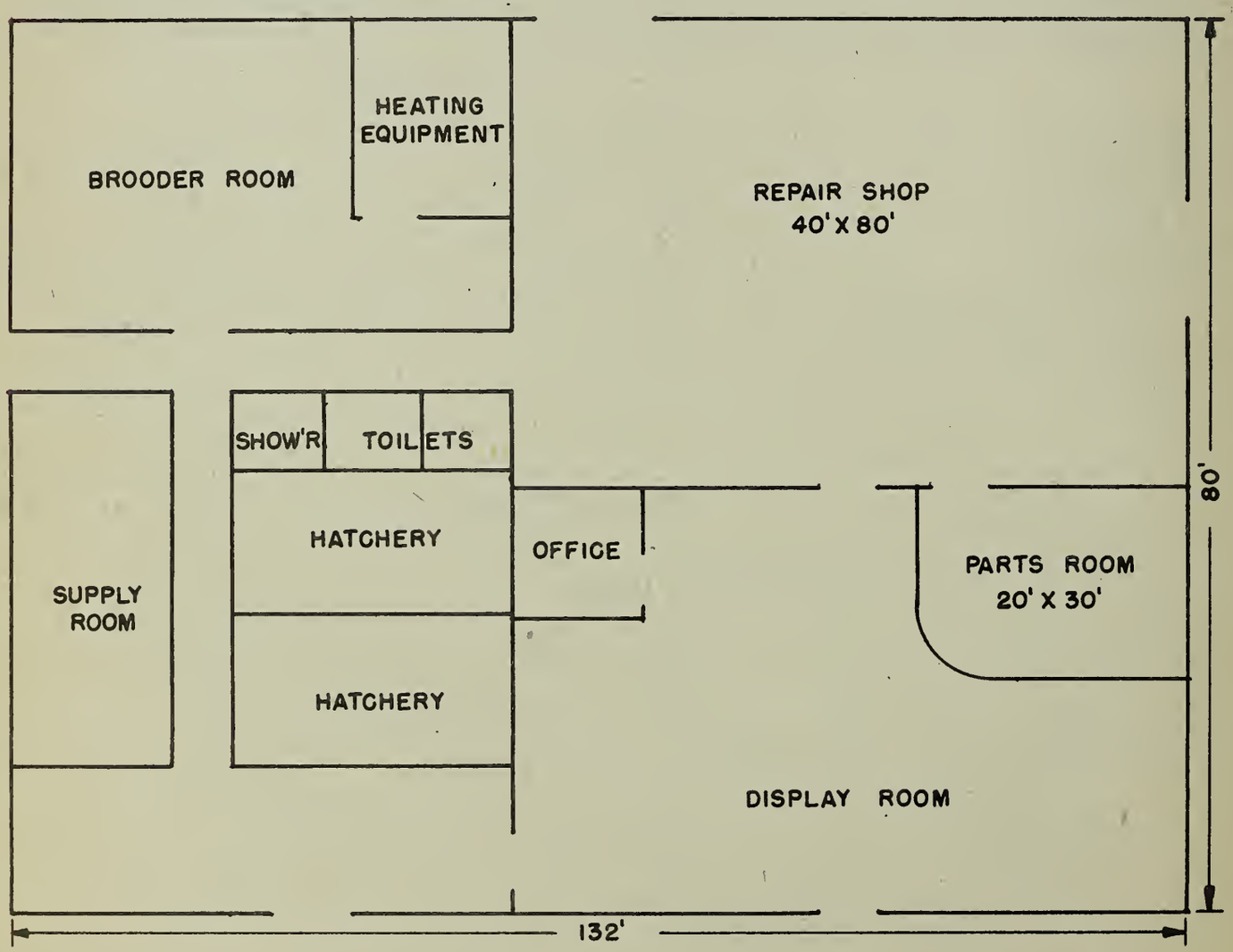


Figure 8. - Floor plan of building for implements, repair shop, and hatchery of Clinton County Farm Bureau Cooperative Association, Frankfort, Ind.

2. The shop and implement building should be conveniently located for the farmers - they should have plenty of parking space and access to an alley.

3. The shop should be near the other facilities of the association if ample space is available.

4. The shop building should have plenty of light, large doors, and adequate heating facilities.

5. The shop should contain a separate room for painting machinery, equipped with an exhaust fan for drawing out the paint mist, and its construction should meet the fire regulations.

6. The size of shop most commonly mentioned as desirable was 50 x 50 feet. At least the same amount of space was recommended for implement warehousing and display at the outset.

Although the parts room and the repair shop are separate departments or operations, they are closely related. In planning new facilities, most associations placed the repair parts near the front of the implement building but adjoining the shop so that they would be convenient both to farmers who buy parts and to mechanics who use them in repair work. Associations handling a considerable volume of machinery had parts rooms with from 400 to 1,000 square feet of floor space. Figure 9 illustrates parts bins in use by the cooperative in Elkhart County.

The Fountain County cooperative had recently installed a parts department 12 x 30 feet in size. It was partitioned off from the display room with a counter and with wire netting around the front and end. Six parts bins were installed at right angles to the counter. Each one was 9 feet high, 2 feet wide at the base, and 8 feet long. Each had 8 large bins and 90 small bins. Figure 10 illustrates the front view of one section and the end view of two sections placed back to back.

Figure 9. - Well arranged and marked repair parts bins are essential in the implement department.

SHOP EQUIPMENT

Acquiring either new or used equipment during the war period was a real problem for the cooperative associations. In some cases it was overcome by purchasing garages and their equipment. The 11 shops surveyed, however, have been able to increase their investment in shop equipment substantially during the last 4 years. See table 7. In

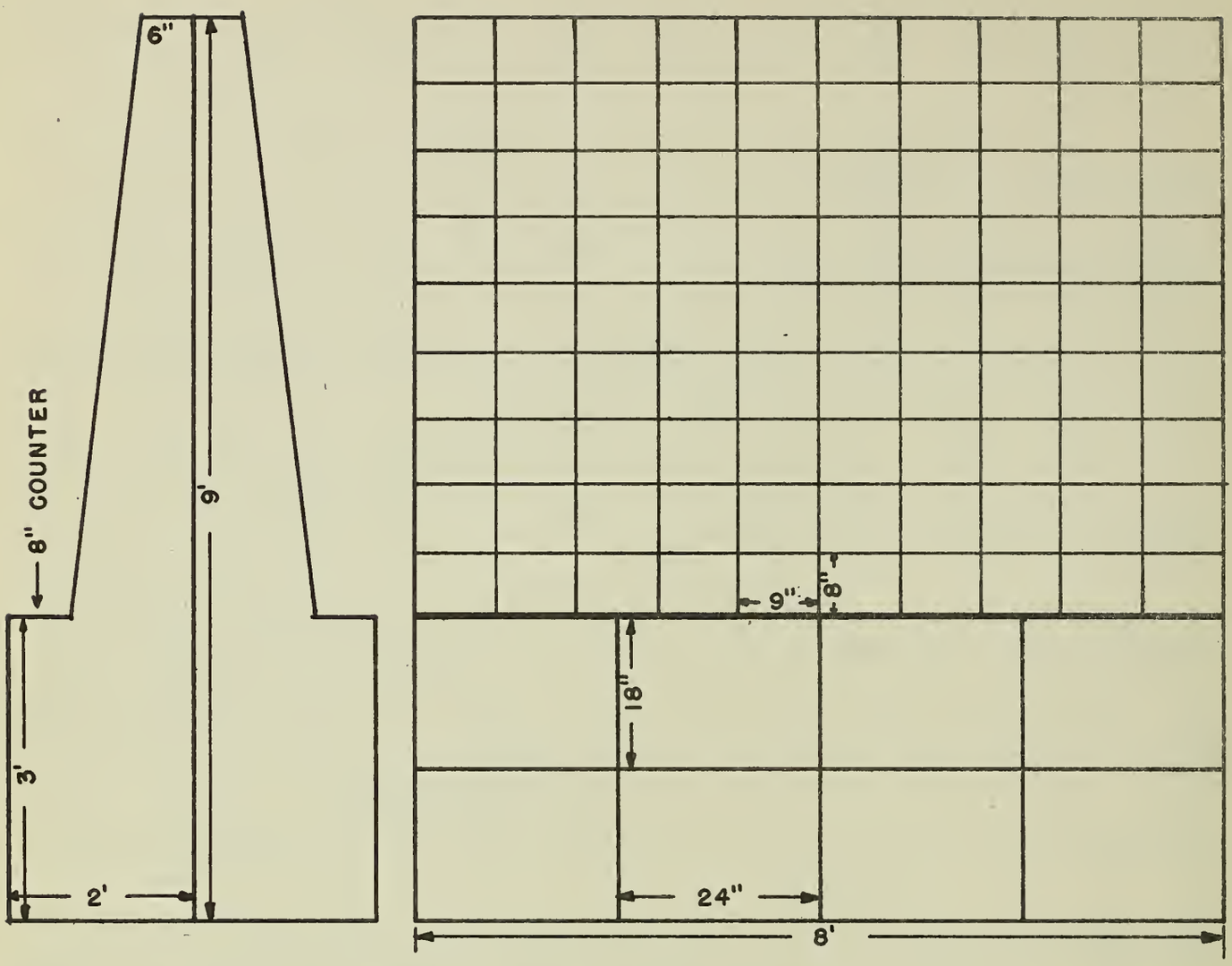


Figure 10. - End and front diagrams of repair parts bins of Fountain County Farm Bureau Cooperative Association, March 1947.

March 1947, 3 shops had between $3,000 and $4,000 invested, at cost price, in equipment; 3 had between $2,000 and $3,000; 2 had between $1,000 and $2,000; and 3 had less than $1,000. In 1943, the 3 largest shops each had only $1,000 to $2,100 worth of equipment. These investments included the cost of air compressors and work benches, but not parts bins, heating equipment, nor implement trailers. Fieldmen of the implement department of the Indiana Farm Bureau Cooperative Association believed that it would require from $2,500 to $3,000 to equip a shop satisfactorily with new equipment at prices at the time of the second survey.

The amount of equipment in the shops varied considerably depending upon the size of the shop, the length of time it had been operating, and the types of services performed. The investment in equipment also varied depending on whether it was purchased new or second-hand and when it was purchased - whether before or during the war period.

Table 7. - Cost of equipment in repair shops of county cooperatives, March 1947 and 1943

COUNTY ASSOCIATION	MARCH 1947	MARCH 1943
Elkhart	$3,179	$800
Noble	4,127	1,590
Huntington	1,972	100
Wabash	1,650	1,128
Fountain	2,575	None
Hendricks	[a] 650	500
Clay	771	900
Sullivan	246	335
Jackson	3,100	310
Clark	2,025	400
Vanderburgh	[b] 2,031	[b] 2,072

[a] Does not include pipe threading machine and other plumbing equipment costing $500.
[b] Depreciated value which was also the cost price to this association. It does not include furnace and parts bins.

The usual equipment in each shop consisted of acetylene and electric welding equipment, power drills, drill presses, bench grinders, valve grinding and refacing equipment, a large shop press, wheel pulling equipment, vises, chain hoists, jacks, an air compressor, work benches, and miscellaneous tools. See table 8. Some had magneto and battery equipment, while a few had some garage equipment for repairing automobiles and trucks which had been acquired with the garage building. See figure 11. A few of the shops had pump tools and other equipment for servicing water systems. The itemized lists of equipment in table 8 were grouped according to principal types and sub-totals shown for each. Mechanics in each shop generally owned small tools.

Figure 11. - This corner of the shop is devoted to welding and magneto equipment.

Table 8. - Itemized kinds and costs of equipment of repair shops of county cooperatives as of March 31, 1947

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]	COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]
Elkhart		***Noble***[b]	
Electric welder - Mid States - 300 amps....	$350 N	Portable electric welder - Hobart (including generator, motor, and home-made trailer).....	$750 N
Acetylene welding outfit - Smith.....	120 N	Other electric welding equipment.....	400 N
Valve refacer - Van Norman, and valve seat grinder - Sioux.....	250 N	Acetylene welding equipment - Riego.....	75 N
Valve seat ring tool for installing ring inserts - Sioux.....	55 N	Acetylene welding equipment - Smith.....	75 U
Valve seat puller - Beshman.....	15 N	Valve seat grinder - Hall.....	165
Valve spring lifter.....	8 N	Valve refacer - Hall.....	165 N
Vises - 3.....	45 N	Hydraulic press - 30 T home-made.....	250 N
Electric drill - 3/4 h.p. Milwaukee.....	85 N	Drill press and stand.....	90 N
Electric drill - 1/4" heavy duty Skillsaw..	38 N	Bench grinder - 12" Norton Co.....	75 U
Flexible buffer shaft electric motor-1/4h.p.	9 N	Small bench grinder.....	60 U
Bench grinder - 6" Black and Decker.....	45 N	Heavy duty portable drills - $55 and $45...	100 N
Brake riveting machine.....	5 N	Portable grinder - 5" Black and Decker.....	85 N
Hydraulic floor jack - 10T Weaver.....	125 N	Chain hoists.....	35 N
Hydraulic jack - 10T Blackhawk.....	250 N	Brake lining machine - Star.....	165 N
Tap and die set - coarse - Greenfield Corp.	18 N	Portable hoist.....	110 N
Boring hone - small - Ammco.....	12 N	Electric power hammer - 25# Little Giant...	200 N
Cylinder hone - Sunnen.....	65 N	Tap and die set-1/4" to 1" - Greenfield....	60 N
Tap and die set - small	12 N	Wheel pulling set.....	60 N
Bolt nippers.....	6 N	Large vises on stands - 2.....	50 N
Parts solution cleaning tank.....	10 N	Large anvil.....	35 N
Belt lacer.....	25 U	Blacksmith forge - home-made brick with electric blower.....	170 N
Wheel puller set - O.T.C.....	115 N	Steam cleaner.....	125 U
Drive socket wrench - 3/4" heavy duty.....	15 N	Pipe and die set - 1/8" to 2".....	35 N
Micrometer set - up to 4" outside; also an inside one.....	12 N	Water pump tools.....	5 N
Chain pull hoist - 1½T.....	25 N	Miscellaneous equipment.....	177
Paint spraying outfit.....	45 N		
Steam cleaner - Hypressure Jenny.....	600 N	Sub-total.....	$3,517
Miscellaneous equipment and tools.....	50		
Sub-total.....	$2,410	Parts washer - Hobart Bros.....	25 U
Battery coil tester - Sun.....	35 N	Ford sleeve puller set.....	20 U
Magneto coil tester - Eiseman.....	55 N	Battery charger - Handy.....	20 U
Magneto charger - home-made.....	25	Ford laboratory testing set.....	100 U
Connecting rod aligner - Ammco.....	25 N	Piston pin hone and cylinder hone - Hall.....	45 U
Hydraulic fuel pump checker (partly home-made).....	40 N	Greese lubsters - 2.....	50 U
Soldering outfit - Prestolite.....	15 N		
Condenser tester - Allen.....	45 N	Sub-total.....	$260
Battery charger - Speedway.....	35 N		
Tractor tire filler.....	75 N	Work benches and cabinets.....	150 N
Sub-total.....	$350	Air compressor.....	200 U
Portable work benches - 3 wooden.....	68 N		
Portable trays on stands.....	24 N	Sub-total.....	$350
Stationary work benches.....	25 N		
Air compressor.....	300 N	Total.....	$4,127
Sub-total.....	$442		
Total.....	$3,179	Pick-up truck - 1T Ford, 1939.....	$400
Implement trailer - 2 wheel.....	450 N	Implement trailer - 2-wheel 8' x 12' bed...	64
Pick-up truck - 1T Ford.....	-		
Equipment desired: Lathe - 8" swing, drill press (ordered), generator and magneto test bench, voltage and amperage tester, and jacks for blocking and setting under tractors.		Total.....	$464
		Equipment desired: Lathe - 6 ft.	

Table 8. - Continued

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]	COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]
Huntington		***Fountain***	
Acetylene welding equipment - Linde Air Products	$100	Acetylene welding outfit on portable stand	$110
Valve grinding equipment - Kwick Way	350	Valve seat grinder - Sioux	275 U
Hand press 30T Perfection	50 U	Brake band machine - Miller	75
Hand drill press	25 U	Valve refacer - Ban Norman	125
Vises - 2	20 U	Chain hoist and dolly - large	60
Bench grinders - 2	40	Chain hoist and dolly - small	30
Electric drill - 1/2 h.p.	40	Electric power drill - up to 3/4"	50
Chain hoists - 3	40	Electric power drill - up to 1/4"	20
Floor jacks - 2	27	Bench grinder - 1 h.p.	75
Wheel puller	10 U	Vises - 1 large 1 small	30
Tap and die set	20 U	Manual press - 2T	50
Hydraulic jack	5 U	Floor jack	40
Anvil	10 U	Wheel puller - 2 sets of jaws	30
Pump tools	100	Piston pin hone - Sunnen	45
Small tools	200	Heavy duty set of sockets - up to 2½"	75
Painting equipment - portable gun	100	Taps and dies - up to 7/8"	75
Sub-total	1,137	Parts cleaning machine	15
		Small hydraulic jacks - 2	25
Coil tester and condenser	50 U	Paint spraying equipment	50
Armature tester, vacuum gauge, compression tester, and timing light	35 U	Battery charger	100 U
Brake riveting machine	5 U	Slow battery charger	5 U
Lubsters - 4	40	Connecting rod aligner	15
Spark plug cleaner	5 U	Tension wrench (for cylinder heads)	5
Line shaft and motor	50 U	Motor analyzer - Sunnen	50
Ridge reamer	10 U	Clutch pressure plant compressor - Plymouth	10 U
Air hammer for straightening fenders	50 U	Crankcase suction gun	5 U
Fender buffers - 2	25 U	Sanding machine	35
Hone	20 U	Pipe wrenches and bolt cutters	30
Cylinder hone	16 U	Miscellaneous equipment and tools	100
Cylinder brushes	5 U		
Reamers - 18	36 U	Sub-total	1,610
Pressure wrench	18 U		
Brake band tester	25 U	Air compressor - 30 cu. ft., 5 h.p. motor	200
Battery charger	175 U	Portable work benches or cabinets	15
Electric battery checker - Willard	30 U	Stationary work benches	50
Sub-total	595	Sub-total	265
Portable work benches and cabinets	-		
Stationary work benches	25	Hydraulic floor hoist with overhead oscillating greasing equipment	700
Air compressor - 200# 65 gal. - Curtis	215 N		
Sub-total	240	Total	$2,575
Total	$1,972		
Truck - 1½T Studebaker with special bed	$1,600		
No trailer			
Equipment desired: Lathe, electric welding equipment, and magneto equipment.		Equipment desired: Implement trailer, pick-up truck, electric welder, wheel and gear pulling sets.	

Table 8. - Continued

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]
Jackson	
Electric welder - Hobart - 200 amps.....	$345 N
Acetylene welding equipment with portable truck - Sight Feed (carbide generating outfit).....	165 N
Drill press - 18".....	120
Bench drill - 1/2 h.p. motor.....	58 N
Electric drill.....	10
Bench grinder - 8" - 1/2 h.p.....	38
Floor grinder - 12" - off a line shaft with drill press.....	35
Valve seat grinder and refacer mounted on portable stand-Kwick Way.....	200
Brake band relining machine - Riess.....	50
Power hack-saw.....	42 U
Vises and benches - 2.....	30
Wheel and gear pulling sets - 3 Blue Point and 3-Way.....	30 N
Drive socket set - 1/2" to 3".....	45
Parts washer - Kleer Flow.....	125 N
Small parts washer - Champion.....	32 N
Spark plug cleaner.....	20
Motor stand - home-made.....	10
Alemite grease gun and lubster.....	70
Transmission grease gun.....	20
Hand grease guns and rack.....	25
Battery charger.....	228 N
Forge - built-in brick with electric blower.....	90 N
Chain hoists - 1/2T and 1T.....	100 N
Electric hoist - 1/2T.....	200 N
Floor jack - 4T Weaver.....	75
Flood light.....	8
Compression testing outfit - Niehoff.....	35
Bushing hone set - Blue Point Snap On.....	60
Blade reamers - 3/8" to 1".....	5
Bearing mandrills.....	15
Creepers and bolt cutter.....	24 N
Lube oil tanks - 3.....	110 N
Miscellaneous equipment and tools.....	100
Sub-total.....	2,520
Air compressor.....	495
Portable work benches - 2.....	10
Stationary work benches.....	75
Sub-total.....	580
Total.....	$3,100
Truck - tires and special bed - 1946 Dodge 1/2T.....	$1,124 N
Implement trailer - Low - 4 wheel, equipped with winch.....	410 N
Total.....	$1,534
Equipment desired: Hydraulic shop press (est. cost - $200), lathe - 6 ft. (est. cost - $500).	

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]
Clay	
Valve reseater - Van Dorn.....	$230
Valve resurfacer.....	
Bench grinder - 6".....	23
Bench drill stand - Van Dorn No. 60.....	70
Power drill - 1/2" Van Dorn, Jr.....	
Vises - 2.....	20
Wheel pulling equipment.....	10
Hand power drill - 1/4".....	20
Bearing race puller with 2 sets of jaws...	20
Pipe wrenches - 24" Stillson.....	6
Taps and dies.....	55
Battery tester.....	7
Magneto spark tester and tools.....	50
Magneto charger.....	25
Screw jack - 18".....	15
Paint sprayer.....	28
Chain hoist - leased,.....	-
Drill press - leased.....	-
Large manual press - leased.....	-
Sub-total.....	579
Air compressor.....	177
Portable work benches.....	-
Stationary work benches.....	15
Sub-total.....	192
Total.....	$771
Implement trailer - 2 wheel - 7' x 12' bed.....	$50
Pick-up truck - 1/2T Ford - 1941.....	820
Total.....	$870
Equipment desired: Welding equipment, vacuum tester for Co-op tractor, equipment for grinding and resurfacing plow points, also for grinding sickles.	
Sullivan[c]	
Bench grinder - 6", 1/4 h.p. motor - Diehl.....	$28 N
Hand power drill.....	45 N
Tap and die set - up to 1/2".....	33 N
Set of sockets.....	30 N
Vise.....	40 U
Sub-total.....	$176
Portable work benches and cabinets.....	10 U
Stationary work benches.....	10 U
Air compressor.....	50 U
Sub-total.....	70
Total.....	$246
Dodge truck - 1940.....	$625
Trailer - none	
Equipment desired: Steam cleaning equipment and painting outfit.	

Table 8. - Continued

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[d]
Vanderburgh[a]	
Electric welder - Glen Roberts - 240 V....	$175
Acetylene welder - Oxall.....	100
Valve refacer - Hall.....	30
Valve seat grinder - Hall.....	100
Valve seat grinder - Black and Decker.....	115
Bench grinder - 1/2 h.p. - 8" stone.....	35
Power drill - 1/4" - Black and Decker....	40
Power drill - 1/2" U. S. Electric Tool Co	40
Tap and die sets - 1/4" to 3/41 - Little Giant No. 311.....	35
Power drill - 3/4" - Black & Decker.....	30
Vises - 2.....	20
Wheel puller set - large - Universal - with attachments.....	26
Portable motor hoist - 1T Yale.....	75
Chain hoist.....	35
Drill press.....	15
Motor stand - 75$ and drill stand $5	80
Jack - 12T.....	15
Paint spray gun and equipment.....	40
Sub-total.....	$1,006
Jack - highlift - Heine and Warner.....	30
Jack - 8T.....	10
Jack 3T.....	5
Ames cylinder gauge.....	10
Ridge reamer - Hastings.....	10
Micrometer - 3/4" (2).....	10
Micrometer - 1" to 2".....	7
Micrometer - 0 to 1".....	3
Torque wrench - New Britain.....	7
Compression tester.....	3
Ratchet set - 3/8".....	10
Cylinder hone - Ammco S.L. 400.....	30
Hone - small bore - Ammoc Model P.H. 200..	30
Hone - Hall, Model X.....	10
Brake cylinder hone - Blue Point.....	20
Ammco reamer.....	12
Rod aligner.....	5
Adjustable reamer set - Keystone.....	30
Valve tools - 3 valve lifters and 2 ring compressors.....	9
Valve regulator - Ammco.....	15
Torch - Ammco.....	10
Drill bits - high speed.....	20
Precision reamers.....	12
Flaring tool.....	5
Piston expander.....	5
Proof creepers - small.....	5
Transmission pump.....	15
Crank case gun - Ball.....	15
Grease guns - 2 high pressure.....	22
Oil pumps.....	10
Electric soldering iron.....	8
Tool chest.....	20
Fire extinguisher.....	9
Car stands.....	5

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST
Vanderburgh (Continued)	
Tire balancer and air tank.....	$5
Log chains.....	5
Spark plug cleaner.....	11
Battery charger.....	45
Sanders - rotary - 2.....	50
Sander stand - 7".....	50
Miscellaneous tools.....	60
Sub-total.....	$653
Air compressor - Manly.....	50
Portable work benches and cabinets.....	72
Stationary work benches.....	50
Sub-total.....	$172
Water system equipment: (1 threading die set, 3 pump jacks, 2 pipe cutters, pipe vises, 2 large pipe wrenches).....	200
Total.....	$2,031
Truck - 1/2T Dodge.....	$156
No trailer	
Equipment desired: Hydraulic press - 20T, motor steam cleaner, hydraulic floor lift, starter and generator equipment	

Clark	COST[a]
Electric welder - Wilson, portable, 40V, 200 amps.....	$550 N
Acetylene welding equipment.....	70 N
Large floor grinder - Clark Junior, 110V..	500 N
Valve grinder and refacer - Sioux.....	400 N
Drill press - Walker - Turner.....	50
Bench grinder - 6" heavy duty - Black and Decker.....	45
Bench grinder - 1/2 h.p. motor.....	25
Gear pulling set - Owatonna.....	100
Chain hoist.....	25
Vise and anvil.....	20
Pipe dies - 2 sets.....	25
Sub-total.....	$1,810
Stationary work benches.....	15
Portable work benches and cabinets.....	-
Air compressor.....	200
Sub-total.....	215
Total.....	$2,025
Implement truck and trailer - none	
Equipment desired: Shop press - 20T, steam cleaner.	

Table 8. - Continued

COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]	COUNTY ASSOCIATION AND ITS EQUIPMENT	COST[a]
Wabash		***Hendricks***	
Acetylene welding equipment - Pureaux.....	$98 N	Valve refacer and reseater - Black and Decker	$100 U
Electric welding equipment - Marquette - 275 amps.....	235 N	Drill press - small.....	25
Power drill press - Barnes 14" circle.....	35 U	Electric drill - 5/8".....	80 N
Hydraulic press - Weaver 30T.....	195 N	Two vises.....	20
Brake lining machine - Chicago Riveting and Machine Company.....	95 N	Large anvil.....	15
Valve seat grinder - Black and Decker - and valve refacer - Super Service	210 N	Forge - home-made.....	25
Wheel pulling set - Owatonna.....	100 N	Wheel pulling set.....	100 N
Wheel aligning gig for cutting down wheels.	23 N	Chain hoist.....	65 N
Bench grinder - 1/4 h.p.....	15 N	Magneto tester and charger.....	45
Large floor grinder.....	10 U	Sub-total.....	$475
Large vise - Morgan.....	39 N	Portable work benches and cabinets.....	15
Triplex block hoist - Yale 1/2T.....	25	Stationary work benches.....	35
Electric vise.....	138	Air compressor - small - 150# pressure - Kelly-American	125 N
Spark plug cleaner - A.C.....	10	Sub-total.....	$175
Powerluber - Lincoln - and grease guns.....	20	Total.....	$650
Chain tightener.....	10		
Hydraulic floor jack - Manley.....	15	Pipe threading machine - up to 2" pipe and can thread bolts up to 3/4" -	
Blacksmith forge.....	25	Pipe Master.....	$400 N
Miscellaneous equipment.....	77	Ratchet thread cutter - 1" to 2" and 1/8" to 1" and pump tools.....	100
Sub-total.....	$1,375	Total.....	$500
Stationary work benches.....	25		
Portable work benches and cabinets.....	50		
Air compressor - Champion.....	200		
Sub-total.....	275		
Total.....	$1,650	Implement truck and trailer - neither one at present owned by association,	
Pick-up truck - Dodge - 1/2T.....	$300	Equipment desired: Welding equipment - acetylene, welding equipment - electric, hydraulic press - 30T, additional magneto testing equipment.	
Implement trailer - 2 wheel - 8' x 12' bed.	98		
Total.....	$398		
Equipment desired: Bench grinder - 1/2 h.p. vises - 3, chain hoist, valve insert tools, connecting rod aligning gig, lathe - 6', magneto equipment.			

[a]Original cost to the association. The letter "N" after each figure indicates that the equipment was new when purchased, while "U" indicates that it was used or second-hand.
[b]Excludes heating equipment - furnace and blower costing $225 - used in shop building.
[c]Sold valve grinder 2 years ago when head mechanic left.
[d]These costs are all depreciated values placed on equipment in 1946 when the organization was divided into two associations.
[e]Excludes heating equipment (furnace and blower) - $110, implement bins - $1,000, and garage building - $150, total = $1,260.

Several mechanics also owned portable steel cabinets in which they kept their tools and small supplies such as rivets, bolts, and keys.

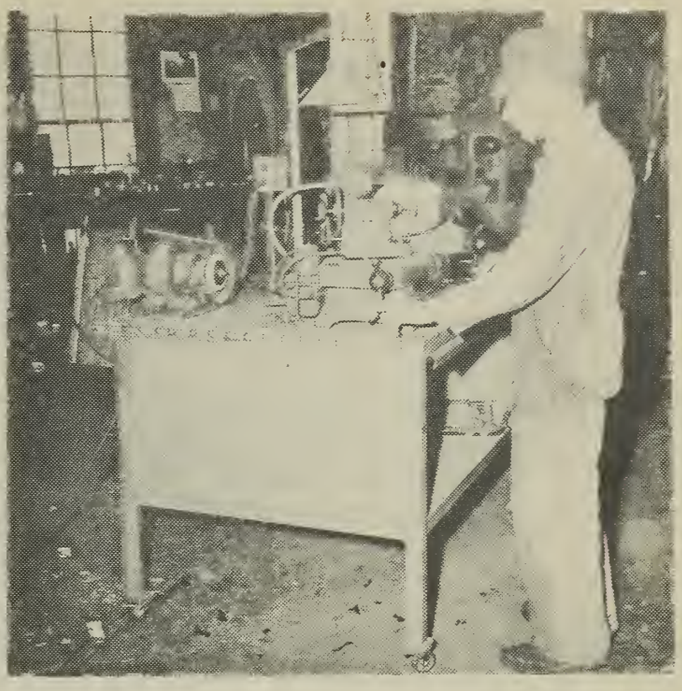


Figure 12. - Steel portable stand and cabinet for valve grinding and refacing equipment and bench grinder can be moved from job to job.

Several shops were using small portable work benches. Mechanics found them to be useful for working on motors or for moving engines to stationary benches when tractor stalls were full. These portable benches were heavily constructed of wood and mounted on casters. The casters, however, were not of the retracting type which would permit the bench legs to be lowered to the floor for heavy work. The benches generally were not equipped with tool drawers nor was any equipment mounted on them. The shop of the Wabash County association had recently built a steel portable bench for its valve grinding and refacing equipment which mechanics could move from one job to another. See figure 12.

Seven implement departments had pick-up trucks to make farm service calls. Five departments had low trailers for hauling tractors and implements from farms to their shops and for delivering new equipment to farmers. The remaining associations expressed a desire for implement trailers. An example of a specially designed four-wheel trailer equipped with a winch which was built at a cost of $410 by the shop of the Jackson County association is shown in figure 13. Investments in both trucks and trailers varied greatly depending upon the type and age when acquired.

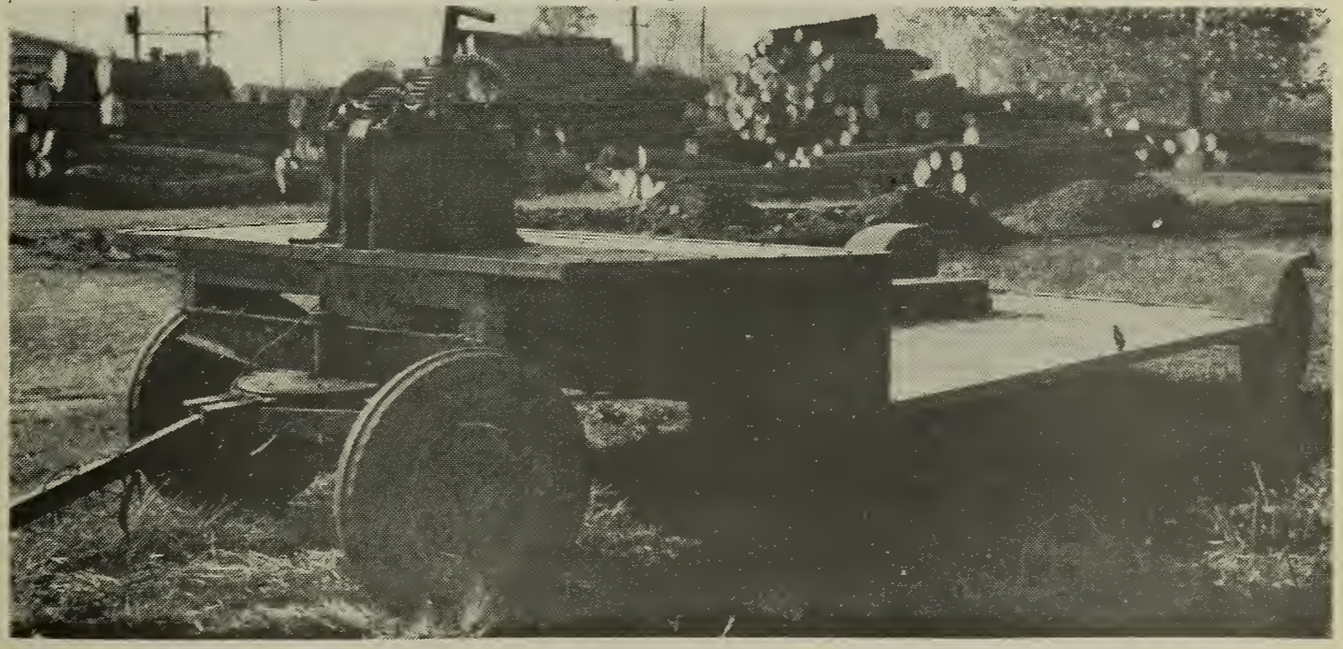


Figure 13. - An implement trailer equipped with a winch is used extensively by the cooperative in Jackson County.

Additional kinds of equipment desired by mechanics and most frequently mentioned were lathes, shop presses, magneto equipment, and steam cleaners.

Managers stressed the importance of protecting all equipment properly to avoid accidents and of training employees in the proper and safe use of shop equipment.

REPAIR SERVICE CHARGES

Service charges were based on the type of work performed - usually hourly rates for time of mechanics spent on repair work at the shop, mileage plus hourly mechanics rate for repair on farms, flat rates for certain special jobs, and list prices for parts used.

LABOR RATES FOR REPAIR WORK

All charges for ordinary farm machinery repairing and overhauling by the cooperative shops are made on an "hourly" basis according to the time mechanics spend on each job. When repair work is done on a patron's farm, he is charged for the time that the mechanic spends away from the shop on the job - that is, from the time the mechanic leaves until he returns. The same hourly rate is charged for work done in the shop and on the farm. Also, the same rate is charged to the implement department for overhauling and reconditioning its used equipment acquired as trade-ins.

Table 9 shows that two cooperatives in March 1947 charged $1 an hour for repair work; five charged $1.50 an hour; three charged $1.75 an hour; and one charged $2 an hour. If the two shops which were doing mainly servicing and minor repairing rather than regular repair work were excluded, the average rate of the remaining nine would be $1.64 an hour. This is an increase of 39 cents an hour over the average hourly rate of $1.25 charged by those of the group operating in 1943, and a percentage increase of approximately 31 percent. Seven had increased their rates, and only one had lowered its rate during this period.

Variations in rates were due to a number of factors such as the wages paid mechanics, the location of the shop with respect to industrial cities, the extent to which accounting records were kept on the productive time of mechanics and departmentalized to show operating results of the implement department and the shop, and the type of work performed - whether regular repair work of mostly servicing new equipment.

In most county seats - the location of 10 of the cooperative shops surveyed - 2 or more repair shops were operated by competing farm machinery dealers. In one county there were 5 and in another 6 competing shops. In addition, generally some welding and machine shops were found in each county seat. No information was obtained on the number of regular farm machinery repair shops in other towns in the counties, but usually a machine shop, welding shop, or garage was the most common type of repair service found in the outlying small towns.

Table 9. - Hourly rates charged for farm machinery repair service in shops and on farms, and mileage charged in performing repair work on farms, March 1947 and 1943

COUNTY ASSOCIATION	LABOR RATE PER HOUR FOR REPAIR SERVICE		MILEAGE CHARGED EACH WAY UNLESS OTHERWISE STATED	
	1947	1943	1947	1943
Elkhart	$1.50	$1.25	5¢ for car & 10¢ for truck and trailer	4¢ for car or truck
Noble	[a]2.00	1.50	5¢	5¢
Huntington	1.50	1.00	10	7
Wabash	[b]1.50	1.00	[c]5	5
Fountain	1.50	No shop	5	No shop
Hendricks	[d]1.75	1.25	[e]7	5
Clay	1.50	.75	$1.50 per trip	3
Sullivan	[f]1.00	1.50	5	4
Jackson	1.75	1.00	4	Job rates[g]
Clark	[h]1.00	1.25	4	No trips
Vanderburgh	[i]1.75	2.00	5	5

[a]Raised from $1.50 to $2.00 per hour in July 1946.
[b]Raised from $1.25 to $1.50 per hour in August 1946.
[c]Same rates for hauling iron wheel tractors to the shop.
[d]Raised from $1.50 to $1.75 per hour in fall of 1946.
[e]Association pays mechanic 7 cents a mile for using his truck or car and he charges patron $1.50 per trip up to 10 miles from shop and $2 if over 10 miles. Charge for hauling tractors to shop and back to farm was from $5 to $10 per round trip.
[f]Mainly servicing work after head mechanic left and was not replaced.
[g]Job rates which included mileage, labor, and repairs. Raised from $1.50 to $1.75 after adding a parts man.
[h]Mainly servicing work rather than overhauling.
[i]Lowered from $2.00 to $1.75 in 1946. Charged $1.25 before war.

The cooperative shops tried to keep their service charges competitive with those of other farm machinery dealers that operated shops. Any savings could then be refunded to patrons at the end of the year. As discussed in a later section of the report, most associations surveyed paid patronage refunds on sales of repair parts and on shop income. The rate has usually ranged from 4 to 8 percent a year recently, thus reducing the hourly shop rates by that amount in the final analysis. The hourly rate of one cooperative shop, however, was reported to be 25 cents an hour less, and the rate of another, 50 cents an hour less than competitors charged for most work. The pace-setting influence on rates and repair bills of farmers in one county was indicated by the statement of a competitor to the cooperative manager that the only reason he had not raised his rates in 1946 was because of the 25 cents an hour lower rate maintained by the cooperative.

With respect to competing machine shops and garages, their rates were generally reported to be higher than those of cooperative and private machinery dealers. In several counties they were 50 cents an hour higher.

During the war, especially good relations existed between cooperatives and other shops as all had more work than they could do. In some cases, where cooperative shops did not have equipment to perform certain jobs, competitors would do the work for them if they had time, or exchange labor.

On the basis of the limited number of associations interviewed, it was believed that service charges should be at least $1.50 an hour and preferably $1.75, and that $2 an hour would be necessary if the shops were to show reasonable net savings. Although records were not kept on the productive time of each mechanic, the more experienced ones stated that it usually was not possible to collect revenue on more than 75 to 80 percent of the time worked by them each day. Thus, on the basis of a service rate of $1.50 an hour and 75 percent productive or collectible time, the labor revenue from one mechanic would only be $45 for a 40-hour week, $54 for a 48-hour week; and $61 for a 54-hour week, without allowing for possible income from overtime. The income at the rate of $2 an hour would be $60, $72, and $81 a week for each mechanic for 75 percent of 40, 48, and 54 hours, respectively.

MILEAGE RATES FOR REPAIR SERVICE ON FARMS

All associations charged mileage for repair work performed on farms by mechanics in addition to the hourly rate for the mechanic's time. The most common rate was 5 cents a mile for the round trip. See table 9. Four associations were charging a higher rate in 1947 than in 1943. Only 1 had a different rate for the use of a truck and trailer than for a car. It was also of interest that 2 associations charged patrons a flat rate per trip although in one case the association paid the mechanic 7 cents a mile for using his truck or car and he in turn charged the patron a flat rate per trip based upon distance from the shop.

SPECIAL JOB RATES

Seven associations reported charging flat rates for special jobs. See table 10. Practically all shops with welding equipment charged a special hourly rate for welding. This rate was usually $2.50 or $3 an hour including materials such as gas and rods, or it was $1.50 or $1.75 an hour plus the cost of materials. Painting tractors was another common service performed at job rates which ranged from $25 to $35 a tractor, depending upon its condition. Steam cleaning motors, carburetor cleaning or tune-ups, and sharpening plow shares were other special rate jobs. Only one shop reported charging farmers a service fee or rental for the use of the shop where they desired to perform some of their own work in it. This rate was 50 cents an hour.

Table 10. - Rates charged for special jobs in March 1947[a]

COUNTY ASSOCIATION	TYPES OF JOBS
Elkhart.....	Welding - $2.50 an hour including materials. Carburetor cleaning - $1.50; magneto repairing - $3.50. Steam cleaning motors - $2.00. Valve grinding - add 10¢ a valve for use of machine. Painting tractor (including steam cleaning) - $35 for tractors of all sizes.
Noble.....	Welding - $2.50 an hour including gas and rods. Carburetor cleaning and tune-up $3.50. Painting tractor - $30. Sharpening plow shares (steel points) $1 a share and grinding cast points - 35¢ a share. Hard surfacing plow shares (steel points) $3.50 a share.
Huntington.....	Welding - $3.00 an hour including materials. Painting tractor - $25-$35 depending upon its condition. Also some job work done such as grinding valves on a car, and a few jobs on tractors.
Wabash.....	Welding - $1.50 an hour plus gas and rods. (With materials the cost usually is $2.75 to $3.00 an hour.) Steam cleaning tractors - $1 to $2. Magneto overhauling by private dealer for co-op: labor - $3.25, repair parts at list with discount to co-op.) Recharging magneto - 75¢. Use of tools by farmers working in shop - 50¢ an hour. Painting of tractor - $25 to $35 depending on its condition.
Jackson.....	Welding - $1.75 an hour plus materials. Sharpening plow points - $1.00 each.
Vanderburgh.....	Welding - $1.75 an hour plus materials.

[a]No special job rates were charged by shops of the Fountain, Hendricks, Clay, Sullivan, and Clark County associations.

CHARGES FOR REPAIR PARTS

Parts and other materials used in repairing and overhauling farm machinery were usually charged to the patron at list prices. This generally resulted in a gross margin of 25 to 30 percent on the sales price.

PERSONNEL

Hiring and keeping skilled mechanics was one of the most serious problems of repair shops during the war period. Each shop was short of mechanics and some could have used as many as 3 or 4 more men. This type of employee had either been called into the Armed Forces or he was working in defense plants at higher wages than farm machinery repair shops were allowed to pay under Government wage ceilings. Some mechanics, however, preferred to stay with the cooperative associations

and to live in rural communities or smaller cities, feeling that in the long-run they would fare just as well, if not better, financially. Since the end of the war, it has been much easier to get mechanics. Many young men who received mechanical training in the Armed Forces have been employed by the cooperative repair shops.

In March 1947, one shop employed 6 mechanics; 2 employed 4 each; 2 had 3 each; 2 had 2 each; and 4 employed only 1 mechanic in each shop. See table 11. Two servicemen and one helper were included in the foregoing classification. The number of other employees in the implement departments is also shown in table 11.

WAGES

A wide variation existed among the associations in wages paid to mechanics. Differences were due to their mechanical experience, productivity, quality of work, and length of service with the cooperative. Also, wages were generally lower in rural communities located at some distance from industrial areas. None of the repair shops were unionized. Table 11 shows the hourly and weekly rates of pay to shop employees and to other personnel in the implement department during March 1947, with brief information on their experience, hours worked each week, and welfare benefits received.

Four associations paid their shop mechanics a weekly salary and one paid a monthly salary. All five specified a certain number of hours work a week. One of this group paid time and one-half for overtime, while the others paid the same rate for overtime as for regular time. The remaining 6 associations paid their mechanics a base hourly rate for a minimum work week of 40 hours with time and one-half for overtime. In most shops the mechanics worked from 50 to 54 hours a week.

In table 11, the wages of mechanics receiving a weekly salary and of those with a base hourly wage rate plus overtime were both converted to hourly earnings.

Wages of mechanics increased substantially - from 50 to 60 percent - during the period from March 1943 to March 1947. Factors affecting increases in addition to general upward trends in wages were Government regulations which placed ceilings on shop wages and on shop labor charges.

The wages of the shop foremen (head mechanics) in 1947 in 6 shops which employed two or more mechanics ranged from $46.08 to $76.25 a week ($0.90 to $1.40 an hour) including overtime. Four of them, however, were receiving from $46 to $51 a week ($0.90 to $1.00 an hour). Wages of head mechanics in 1943 ranged from $30 to $35 a week with the two highest receiving $45 and $48. Thus, their wages in 1947 were about 50 percent above those in 1943.

The wages paid to other mechanics in 1947 generally ranged from $40 to $48 a week (80 to 95 cents an hour) including overtime. Such mechanics only received $25 to $30 a week in 1943. Thus, their wages in 1947 had increased approximately 60 percent.

Table 11. - Wages, experience, work week, and welfare benefits of employees of implement departments and repair shops, March 1947

ASSOCIATION CODE NUMBER	POSITION	WAGES[a] BASE RATE PER HOUR	WAGES[a] EARNINGS PER HOUR	WAGES[a] EARNINGS PER WEEK	MACHINERY OR MECHANICAL EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS, VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
1	Manager - implement department and parts.....	$1.16	$1.16	$66.00	18 years - 8 with co-op	All employees work and are paid on the basis of 57 hours per week. Overtime is paid for at the same rate.	All employees: Holidays - all off with pay. Vacation - 1 wk. with pay if employed 1 year, 2 weeks if employed 5 years. Sick leave - at discretion of management. Other time off with pay 1 day off twice a month (each pay period) to be taken at that time. Retirement insurance - co-op pays 50% of cost.
	Repair shop foreman.....	.84	.84	48.00	9 years - 6 with John Deere, 3 with co-op		
	Mechanic.....	.82	.82	47.00	2 years - all with co-op		
	Mechanic.....	.82	.82	47.00	3 mos. - all with co-op		
	Mechanic (also assembling and painting).....	.65	.65	37.00	15 mos. - all with co-op		
2	Manager - Implement department and parts.....	$1.08	$1.08	$55.00	12 years - 3 with co-op implement department	Manager works and is paid on basis of 51 hrs. per week. Other employees work 51 hours and receive time and one-half for amount above 40 hours per week.	All employees: Holidays - all off with pay. Vacation - 1 week with pay if employed 1 year. Sick leave - 1 week a year with pay. Retirement program - employee contributed 2.67% of salary classification as of January 1, and co-op contributes approximately the same amount
	Shop foreman (head mechanic).....	.94	1.04	53.00	17 years - 15 with highway dept., 2 with co-op		
	Mechanic.....	.88½	.98	50.00	20 years - 16 as auto mechanic , 4 with co-op		
	Mechanic.....	.85	.94	48.00	1 year - with co-op (welding)		
	Mechanic.....	.85	.94	48.00	2 years - all with co-op		

Table 11. - Continued

ASSOCIATION CODE NUMBER	POSITION	WAGES[a] BASE RATE PER HOUR	WAGES[a] EARNINGS PER HOUR	WAGES[a] EARNINGS PER WEEK	MACHINERY OR MECHANICAL EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
3	Manager - implement department and parts.....	These 3 operate implement department and shop on a partnership basis, and pay co-op a stipulated commission on sales and shop income.[c]			7 years - all with co-op, previously in co-op warehouse	Set own hours	
	Implement salesman[b].....				- - -		
	Head mechanic.....				15 years - 8 in garage, 7 with co-op		
	Mechanic[d].....	$0.80	$0.80	$40.00	2 years - 1 with co-op.	Both work and are paid on basis of 50 hrs. per week.	Mechanic and helper: Holidays - all off with pay. Vacation - 1 week with pay. Sick leave - up to partnership employers.
	Helper[d].....	.60	.60	30.00	2 yrs. - all with co-op		
4	Manager - implement and parts department.....	$0.75	$0.85	$45.75	3 yrs.-all with co-op	All work 54 hours a week and are paid time and one-half over 40 hours.	Holidays - all off with pay. Vacation - 1 week per year with pay. Sick leave - up to manager. Farm Bureau insurance program available for employees.
	Implement seryiceman.....	1.00	1.11	61.00	8 yrs. - all in shop of co-op		
	Head mechanic (shop foreman).....	1.25	1.41	76.25	15 yrs.-2 with co-op		
	Mechanic.....	1.00	1.11	61.00	1 yr.-all with co-op		
	Partsman-mechanic.....	1.00	1.11	61.00	15 yrs. - 1 with co-op.		

Table 11. - Continued

ASSOCIATION CODE NUMBER	POSITION	WAGES[a] BASE RATE PER HOUR	WAGES[a] EARNINGS PER HOUR	WAGES[a] EARNINGS PER WEEK	MACHINERY OR MECHANICAL EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS, VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
5	Manager - implement department.....	$50.00 plus 1% commission on sales except parts			9 months - all with co-op	No base work week- usually work 54 hours or more per week.	All employees:
	Implement salesman.....	$38.42 plus 1% on sales except parts.			- - -	- - -	Holidays - all off with pay.
	Manager - parts dept.....	$0.70	$0.88½	$44.80 +4.81 bonus	13 years - 6 with co-op	Work 56 hours per week and paid time and one-half above 40 hours.	Vacation - 1 week with pay after 1 year.
	Head mechanic (shop foreman).....	.72	.91	46.08 +4.81 bonus	30 years - 6 with co-op		Sick leave - up to management
	Mechanic (tractor).....	.65	.73½	39.65	3 years - all with co-op	- - -	Other - Christmas present of $10 per year of service in 1945. Annual bonus to some of older employees.
	Mechanic (tractor).....	.67	.75½	40.87	6 years - all with co-op	Work 54 hours per week and paid time and one-half above 40 hours.	
	Mechanic (tractor).....	25.21 a week plus $75 a mo. G.I. payment.					
	Mechanic (implement).....	.67	.75½	40.87	5 years - all with co-op		
	Mechanic (implement).....	.67	.75½	40.87	7 years - all with co-op		
6	Manager - implement and parts department.....	$1.06	$1.06	$53.08	- - -	All work and are paid on the basis of 50 hours a week. (5½ days at 9 hours a day.)	Holidays - all off with pay.
	Implement serviceman.....	.92	.92	46.15	- - -		Vacation - 1 week per year with pay.
	Mechanic.....	.69	.92	34.62	- - -		Sick leave - up to manager.

Table 11. - Continued

ASSOCIATION CODE NUMBER	POSITION	WAGES[a] BASE RATE PER HOUR	WAGES[a] EARNINGS PER HOUR	WAGES[a] EARNINGS PER WEEK	MACHINERY OR MECHANICAL EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS, VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
7	Manager - implement department and parts.....	$40.38 per week plus 10% of net savings of department			30 years - 1½ with co-op	No base work week.	Holidays - all off with pay.
	Mechanic.....	$0.82	$0.82	$42.69	4 years - 1½ with co-op	Works and is paid on basis of 52 hours a week. (Works 9-½ hours per day with 1/2 day off a week.)	Vacation - 1 week a year with pay. Sick leave - up to general and department manager.
8	Manager - implement and parts department.....	$0.85	$0.85	$42.50	9 years - all with co-op (2 years on implements)	Works and is paid on basis of 50 hours a week (5½ days at 9 hours a day.)	Holidays - all off with pay.
	Mechanic.....	.73	.79	38.00	9 years - 5 years as mechanic with co-op	Works 48 hours a week and is paid time and one-half above 40 hours (5½ days a week)	Vacation - 1 week per year with pay. Sick leave - up to manager. Farm Bureau retirement program - about 50% of cost paid by co-op.[9]

Table 11. - Continued

ASSOCIATION CODE NUMBER	POSITION	WAGES[a]			MACHINERY OR MECHANICAN EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS, VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
		BASE RATE PER HOUR	EARNINGS PER HOUR	EARNINGS PER WEEK			
9	Head mechanic (In charge of shop and parts).....	$1.12½	$1.12½	$67.50	34 years - 4 with co-op	Works and is paid on basis of 60 hours a week.	Holidays - all off with pay. Vacation-1 week per year with pay. Sick leave - up to management.
	Serviceman (On water system and sets up machinery).....	.95	.95	45.60	- - -	Works and is paid on basis of 48 hours a week. Time and one-half paid for overtime.	
10	Manager - implement department.....	.95	1.04	52.25	10 years - 2 with co-op in implements.	All work 50 hours a week and are paid time and one-half above 40 hours a week	Holidays - all off with pay. Vacation-1 week per year with pay. Sick leave - up to manager. Retirement insurance - 50% of cost paid by co-op Life insurance - co-op pays an amount on premiums equal to 5% of wages. Bonus - 2% of net savings to manager and 3% to other employees.
	Manager - parts department.....	.85	.90	46.75	1 year - all with co-op		
	Head mechanic (shop foreman).....	.90	.99	49.50	15 years - 2 with co-op		
	Mechanic.....	.85	.90	46.75	1½ years - all with co-op		
	Mechanic.....	.80	.88	44.00	6 years - just started with co-op		

Table 11. - Continued

ASSOCIATION CODE NUMBER	POSITION	WAGES[a] BASE RATE PER HOUR	WAGES[a] EARNINGS PER HOUR	WAGES[a] EARNINGS PER WEEK	MACHINERY OR MECHANICAL EXPERIENCE	BASE WORK WEEK, HOURS WORKED, AND OVERTIME RATES	HOLIDAYS, VACATIONS, SICK LEAVE, AND WELFARE BENEFITS
11	Manager - implement and parts department.....	$0.70	$0.72	$39.55 plus bonus	25 years - 5 with co-op	Work 51 hours a week and are paid time and one-half above 40 hours.	Holidays - all off with pay. Vacation-1 week a year with pay. Sick leave - 6 days a year with pay. Retirement insurance - 50% of cost paid by co-op. Bonus - same rate on salary as that paid to patrons as patronage refund (from 6 to 8% recently).
	Serviceman.....	.70	.72	$39.55 plus bonus			

[a] Includes earnings of employees before deductions for insurance, retirement, taxes, and similar items. Earnings per hour and per week include overtime.
[b] Also sets up, delivers, and services machinery and milking machines.
[c] See text. Net income of these men indicated to be comparable to salaries received by those in other shops.
[d] These men are employed by the partners who operate the implement department and shop.
[e] Both paid a straight monthly salary. Prior to November 1, implement manager received $190 per month plus a bonus.
[f] Receives $160 per month plus $40 per month from Government under G.I. training program.
[g] Employee pays 2.6% of salary classification and employer pays similar amount to give employee a monthly income equal to 1% of his monthly salary for each year employed.

WELFARE BENEFITS

Employee welfare programs and benefits are receiving increasing attention by cooperatives. They must be taken into consideration along with wages to determine the total remuneration of employees. All associations gave employees at least one week's vacation a year with pay. See table 11. One gave 2 weeks annually after 5 years employment. All gave holidays off with pay. Sick leave was generally left to the judgment of the general manager. In some cases one week a year was given.

Several associations paid approximately 50 percent of the cost of Farm Bureau retirement insurance for employees. One association reported that the employees contributed 2.67 percent of his salary classification as of January 1, and the cooperative contributed slightly more than this amount. One association also paid an amount on the life insurance premiums of employees equal to 5 percent of their wages.

Only two of the groups reported paying a bonus to employees. In one case the rate or percentage of bonus on salaries was generally the same as the rate of patronage refund on purchases by patrons.

EMPLOYEE TRAINING

Much progress has been made in training county association implement and repair servicemen. The implement department of the Indiana Farm Bureau Cooperative Association has been largely responsible for training programs. Originally it held schools of about one week's duration at its State shop. These covered several types of equipment. During the last 4 years, it changed to seasonal schools in each district. The ten districts served by general fieldmen of the State wholesale consist of approximately nine counties each.

By holding these training schools in the districts, all the implement and servicemen in the counties can attend approximately every 1 to 3 months, depending upon the season of the year. At these schools instruction is provided in setting up and adjusting equipment which is going to be used at that particular season of the year. In this way information on service problems and on the operation of each machine is given to the servicemen just prior to the time when they will be needing it most. For instance, a school in March may deal primarily with plows and discs, one in April with corn planters, one in June with combines, one in July with grain drills, and one in August or September with corn pickers and hammer mills. In the case of a new piece of major equipment such as tractors, a State school followed by district schools may be held.

At these district schools, usually the all day program is followed by a discussion period in the evening. In some cases, the meeting may start after an early lunch. At certain times of the year only an evening meeting can be scheduled. The men responsible for the repair shop service are always invited and the mechanics alternate in attending.

The implement department heads usually attend, and the general manager, the county association board of directors, and general fieldmen of the State association are invited to the evening meal and discussion period.

These training schools are actually conducted by the State association implement department's fieldmen - numbering three in the State at present. Their job is to train the county servicemen and keep them informed at all times about equipment, new designs, improvements, and distribution and service operations and policies. This type of seasonal school and training held on a district basis has been the most satisfactory of any attempted by the State association.

In addition, the county associations have encouraged their mechanics to attend local welding schools and any other schools or meetings where they could obtain training or information on repairing farm machinery and equipment.

OPERATING DATA ON SHOPS AND IMPLEMENT DEPARTMENTS

One of the pressing needs of most associations was better records on their shop operations and on their combined implement, parts, and shop department. None had prepared separate operating statements on their shops so it was impossible to determine whether they were operating at a saving or a loss. Only two of the associations had separate statements on their implement departments in 1946.

SERVICE REVENUE AND SALES

Nine of the eleven cooperatives surveyed in 1947 listed shop labor revenue as a separate item under "service income" or "other income" in their operating statements. The other two included such labor revenue with the sales of implements and parts. Revenue from labor charges in 4 of the largest shops in 1946 ranged from $6,000 to $9,957 each, and in 3 others it ranged from $2,412 to $4,767, while the remainder had smaller amounts. See table 12. Only one shop classified labor revenue on the basis of that received from farmer patrons and that received from work done for the association.

Data on total wages paid mechanics in each shop during 1946 were not obtained. On the basis of weekly wages received in March 1947, see table 11, total wages for 1947 would be approximately as follows for each county association: Elkhart - $9,308, Noble - $9,360, Huntington - $6,000, Wabash - $12,268, Fountain - $2,236, Hendricks - $3,510, Clay - $1,976, Sullivan - $2,080, Jackson - $4,862, Clark - $1,820, and Vanderburgh - $7,124, thus making a total of $60,544.

These data indicate that unless the shop revenue from labor charges increases in 1947, it will cover or exceed the wages paid mechanics in only 4 shops. As mentioned, a mechanic receiving $50 a week would have to collect $1.50 an hour on 75 percent of 45 working hours a week if the revenue from his labor is to cover his wages.

Table 12. - Labor revenue, repair parts sales, farm machinery sales, and gross margins on machinery and parts of 11 cooperative associations in 1946

COUNTY ASSOCIATION	FISCAL YEAR ENDED	LABOR REVENUE	REPAIR PARTS SALES	FARM MACHINERY SALES	GROSS MARGIN ON SALES OF MACHINERY AND PARTS	
					AMOUNT	PERCENT
Elkhart.....	12/31	$6,000	$14,000	$74,007	$23,441	26.7
Noble.....	12/31	9,957	[a] 5,000	31,645	[b] 7,246	19.6
Huntington....	12/31	3,000	[a] 15,000	47,115	[b] 3,949	6.3
Wabash.....	[c] 9/30	8,000	[a] 26,000	[d] 72,373	34,458	35.0
Fountain.....	12/31	1,391	[a] 15,000	[d] 50,961	14,876	22.5
Hendricks.....	9/30	2,412	1,905	20,509	5,329	23.8
Clay.....	12/31	966	[a] 12,000	38,095	10,572	21.0
Sullivan.....	12/31	[e] 1,291	[a] 8,000	25,602	6,709	20.1
Jackson.....	11/30	4,767	7,000	43,838	16,048	31.6
Clark.....	[f] 10/30	1,000	[a] 8,000	23,287	4,783	15.3
Vanderburgh...	[f] 12/31	7,329	[a] 24,000	73,320	16,646	17.1
Total.....	-	$46,113	$135,905	$500,752	$144,057	-
Average.....	-	$4,192	$12,355	$45,523	$13,096	22.6

[a] Estimated that 25 percent of total farm machinery and parts sales consisted of repair parts, except where other estimates were made by managers.
[b] Low gross margin because association received a commission on implement business which is handled by three individuals.
[c] An 11-month period due to change of fiscal year.
[d] Includes about $5,000 worth of tires.
[e] Includes $641 from the servicing of water systems.
[f] Includes sales and service revenue of the original Tri-County Farm Bureau Cooperative Association for the first 5 months of the year and of the Vanderburgh County Farm Bureau Cooperative Association (after division) for the last 7 months of the year.

Only two associations showed sales, cost of sales, and gross margins for repair parts separate from those for farm machinery. Estimates, however, were made by several other associations. None classified the sales of repair parts on the basis of those used by the shop and those sold direct to farmers. Only one association classified its farm machinery sales into new and used machinery. Gross margins on the combined sales of farm machinery and repair parts for 1946 are shown in table 12.

Daily job orders or tickets were not summarized or classified by any of the repair shops. Estimates of the number of tractors in their shops during 1946 varied from 75 to 280, and of other pieces of equipment from 50 to 300. The implement department of one association makes a summary of all its daily tickets each year. In 1945, it had 7,977 tickets which were made out to 1,505 patrons for implements, parts, and shop work.

OPERATING STATEMENTS OF THREE IMPLEMENT DEPARTMENTS

As mentioned, only two associations surveyed had prepared operating statements on their major departments in 1946 and one other had prepared

Table 13. - Operating statements of implement departments of the Noble and Fountain County cooperative associations for their fiscal years anded December 31, 1946 and of the Howard County cooperative association for its year ended December 31, 1944

ITEMS	COUNTY ASSOCIATION		
	NOBLE	FOUNTAIN	HOWARD[a]
Sales	[b]$45,877	[c]$65,961	$8,147
Cost of sales	34,450	51,085	7,611
Gross margin	11,427	14,876	536
Shop labor revenue	9,957	[d]1,391	2,124
Total margin and labor revenue	$21,384	$16,267	$2,660
Salaries and commissions	12,339	[f]6,508	3,358
Other expenses	[e]4,584	[f]4,011	[g]1,816
Total expenses[e]	16,923	10,519	5,174
Net operating savings	$4,461	$5,748	(-2,514)
Other revenue	(h)	334	(h)
Total net savings	$4,461	$6,082	(-2,514)

[a]Shop discontinued in 1944. Implement department was continued but separate operating statements were prepared only on branch stations. Sales in 1943 were $11,191 and the net loss was $771.
[b]Included approximately $9,000 worth of iron, calcium chloride, tires, and lubricating oil. Implement department sales represented 6 percent of total sales.
[c]Sales include approximately $5,000 worth of tires and twine. Implement department sales were approximately 7 percent of total sales.
[d]Included inter-department labor revenue of $461 and labor revenue from patrons of $930.
[e]All expense items were allocated separately to the implement department on a basis which was believed to be as near actual as possible rather than upon the basis of sales.
[f]All expense items were allocated separately to the implement department on an actual basis if possible. Strictly general overhead expenses were allocated on the basis which the gross margin and service revenue of the implement department was of total gross margin and service revenue - approximately 8 percent in 1946.
[g]Practically all expense items were individually allocated to the implement department on an actual basis as nearly as possible.
[h]Other revenue not allocated to departments.

such statements until the close of its 1944 fiscal year - the last year in which it operated a repair shop. Condensed operating statements of the implement departments of these associations are contained in table 13. Several others, however, prepared such statements on their branch stations and a number had begun or were planning to departmentalize their operations in 1947 - both from the standpoint of management and accounting.

OPERATING RECORDS AND FORMS

As mentioned, all associations needed better records on their shop operations. Most of them could also improve the records of their implement department. As this department and the shop increase in size, more adequate accounting may be expected. More detailed and complete records on the shops would aid the State association in advising practices and set-ups which are most successful. Following are comments regarding records in use and suggestions for improvement.

JOB ORDERS

All associations surveyed used some type of a job or shop order for their record of work to be done, work performed, and itemized costs of parts and labor. These orders were usually made in triplicate with copies going to the patron, the office, and the shop. The shop copy was frequently on light weight cardboard and served as a "work card" for the mechanic. It was usually kept with the machine during the repair period and as work progressed the material and labor expended was listed on the reverse side.

A copy of the job order used by two county associations is illustrated by accounting forms 1 and 2. The form used by the Noble County association is almost the same as that of the State association. The back of the heavy shop copy provides a good work sheet for the mechanic in recording materials and parts used and the time required on the job. The back of the patron and office copy of the form used by the Elkhart County association provides for data on "Additional Material Used" in columns with the following headings: Quantity, part number or description, amount of sale, and cost. The cost of the repair parts as well as the selling price can be recorded on the office copy if it is desired to have an inventory value on parts without taking a physical inventory or extending and totaling the perpetual inventory record each month.

Job orders provide useful information to the management of the cooperative association. The cost and time figures accumulated on various repair jobs help in making estimates to patrons on service jobs, and in determining the efficiency of mechanics. Also, they are useful for reference purposes when patrons want to check on the date that a machine was last overhauled and the nature of the work performed on it.

INVENTORY RECORDS OF REPAIR PARTS

Because handling repair parts is so closely related to the operation of a repair shop, comments on the importance of adequate parts inventory records are included. A perpetual or daily running inventory was considered the only satisfactory system for the accounting and control of repair parts. Such a system makes possible the control of slow moving or obsolete items and the ordering of parts before they are out of stock.

Form 3 illustrates typical parts inventory cards used by the association. A card is used for each part which lists at the top its number, name or description, source, bin number, the maximum and minimum quantity to carry, and its cost, list, and selling price. The rest of the card has columns entitled date, number received, number sold, and balance on hand. The card may also have an "on order" section with columns for the date, quantity ordered, quantity received, and balance on order. At the bottom a summary of monthly sales may be included. If desired, a bin card showing bin number, part number, description, implement used on, and selling price could be attached to the front of each bin.

Form 1. - Job order used by farm machinery repair shop of the Noble County Cooperative Association.

Noble County Co-operative Association, Inc. - SERVICE DEPT. Nº 806

ALBION, INDIANA

NAME _____ DATE _____

ADDRESS _____ PHONE NO. _____

MAKE & MODEL	LICENSE NO. & STATE	MOTOR NO.	SERIAL NO.	MILEAGE

QUAN	PART NO.	ARTICLE	PRICE
		TOTAL PARTS	
		GALS. GAS @	
		QTS. OIL @	
		LBS. GREASE @	
		TOTAL GAS, OIL, GREASE	

OPERATION NO.	DESCRIPTION OF WORK	AMOUNT

QUAN.	ACCESSORIES TIRES & TUBES	PRICE

TOTAL LABOR	
TOTAL PARTS	
GAS, OIL, GREASE	
ACCESSORIES	
TIRES, TUBES	
OUTSIDE REPAIRS	
TAX	
TOTAL	

I hereby authorize repair work to be done as described above with necessary parts, to be listed at your regular prices. I agree to pay cash on delivery of car or on satisfactory terms to you; and until paid in full it shall constitute a lien on this car. I further agree that you will not be held responsible for car or articles left in car in case of fire, theft, accidents or other causes beyond your control. My car may be driven by your employees for road tests at my own risk.

PROMISED	DELIVERED	RECEIVED BY	WORK AUTHORIZED BY
A. M.	A. M.		
P. M.	P. M.		

DATE	DESCRIPTION OF WORK (TO BE FILLED IN BY MECHANIC)	MECHANIC'S NAME	NO.		ELAPSED TIME	TIME
				STOP 1 START		
				STOP 2 START		
				STOP 3 START		
				STOP 4 START		
				STOP 5 START		
				STOP 6 START		
				STOP 7 START		
				STOP 8 START		
				STOP 9 START		
			TOTAL HOURS			

TOTAL HOURS ON JOB _____ @ _____ $ _____
RATE

Form 1-A. - Reverse side of job order (shop copy) used by the Noble County Cooperative Association.

ELKHART COUNTY FARM BUREAU
CO-OPERATIVE ASS'N., Inc.

212 West Lincoln Avenue

GOSHEN, INDIANA

Nº 200

NAME _____ KIND OF MACHINE _____

ADDRESS _____ R.F.D. _____

PHONE NO. _____ PHONE WHEN READY? YES ☐ NO ☐

MAKE _____ MODEL _____ SERIAL NUMBER _____

DATE RECEIVED _____ 19__

DATE PROMISED _____ 19__

ORDER WRITTEN _____

BY _____

WORK TO BE DONE

MATERIAL ADDITIONAL LABOR ONLY

LUBRICATE ☐ CHANGE OIL ☐ FLUSH TRANS. ☐ FLUSH DIFF. ☐ CLEAN ☐ PAINT ☐

		LABOR CHARGE	

QUAN.	PART NO. OR DESCRIPTION	UNIT PRICE		TOTAL	
	TOTAL PARTS				

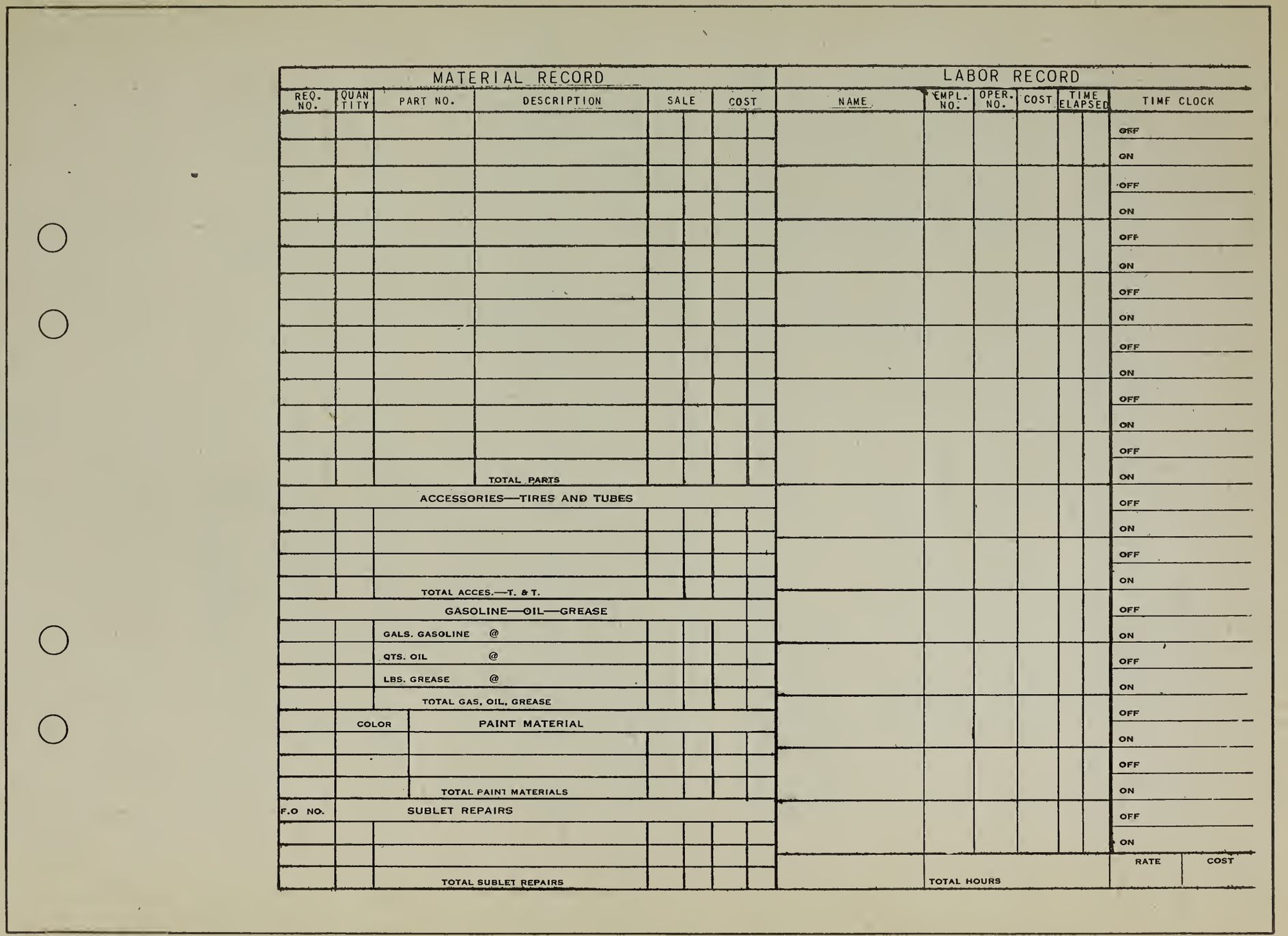
QUAN.	OTHER MATERIALS	AMOUNT	QUAN.	GAS - OIL - GREASE	AMOUNT	
				GAL. GASOLINE		
				QUARTS OIL		
				POUNDS GREASE		
TOTAL OTHER MATERIALS				TOTAL: GAS-OIL-GREASE		

TOTAL LABOR		
TOTAL PARTS		
GAS. OIL. GREASE		
OTHER MATERIALS		
OUTSIDE WORK		
TAX (WHERE APPLICABLE)		
TOTAL		

I HEREBY AUTHORIZE THE REPAIR WORK TO BE DONE AS DESCRIBED ABOVE ON THE MACHINE(S) NAMED HEREON. ALL REPAIR PARTS ARE TO BE BILLED AT YOUR REGULAR PRICES. I AGREE TO PAY CASH FOR SUCH REPAIR PARTS AND LABOR ON DELIVERY OF MACHINE(S) OR ON TERMS SATISFACTORY TO YOU, AND UNTIL PAID IN FULL, ANY UNPAID BALANCE SHALL CONSTITUTE A LIEN ON THIS MACHINERY. I FURTHER AGREE THAT YOU WILL NOT BE HELD RESPONSIBLE FOR LOSS OR DAMAGE TO SAID MACHINERY FROM FIRE, THEFT OR OTHER CAUSES BEYOND YOUR CONTROL.

DATE _____ 19__ SIGNED BY _____

Form 2. - Job order used by repair shop of the Elkhart County Farm Bureau Cooperative Association.



MATERIAL RECORD

REQ. NO.	QUANTITY	PART NO.	DESCRIPTION	SALE		COST	
			TOTAL PARTS				
			ACCESSORIES—TIRES AND TUBES				
			TOTAL ACCES.—T. & T.				
			GASOLINE—OIL—GREASE				
		GALS. GASOLINE @					
		QTS. OIL @					
		LBS. GREASE @					
			TOTAL GAS, OIL, GREASE				
	COLOR		PAINT MATERIAL				
			TOTAL PAINT MATERIALS				
F.O NO.			SUBLET REPAIRS				
			TOTAL SUBLET REPAIRS				

LABOR RECORD

NAME	EMPL. NO.	OPER. NO.	COST	TIME ELAPSED		TIME CLOCK
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
						OFF
						ON
	TOTAL HOURS					RATE / COST

Form 2-A. - Reverse side of job order (shop copy) used by Elkhart County Farm Bureau Cooperative Association.

These cards are usually filed in a card file according to types of machinery. A form that fits a multiple ring binder may be used if preferred. One association was using a visible card file similar to the second example in form 3 which was much more convenient than the ordinary file. With such a system, colored signals can be used to indicate the condition of the inventory and the status of each part. The signals are attached to the cards and indicate at a glance items for re-order, those on open order, and those on back order.

A pertpetual inventory record also could be used for implements. In such case, a card would be prepared for each machine as it is received. If used machinery is taken on a trade-in, the card would so indicate and give its description, extra attachments, and similar information. When the machine is sold, the patron's name and type of machine would be shown on a card and filed according to the patron's name in order to provide a follow-up record for service calls. When a repair order comes in, the date, work order number, and amount of the order is entered upon the proper card and a signal attached to indicate follow-up data for the next service call. The owner could then be reminded to have his equipment checked to prevent break-downs in the field and the association should eventually realize greater revenue from repair services.

DAILY REPORT OF SHOP OPERATIONS

A daily report based on information contained on the job orders or tickets should be prepared. It may vary in length or detail depending upon the current information desired by the management. Generally, it would include the labor charges collected from each patron, the sale of repair parts which were used on the job and whether the transaction was a cash or credit one. Such a report would supplement and summarize the daily transactions of the shop which are recorded in the journals of the standard double-entry bookkeeping systems of the associations.

Form 4 illustrates a daily shop report based on that used by the Vanderburgh association but revised to show labor income from patrons and from the association separately and also to show "other income." This report, in addition to giving the total income received for any period, has a daily summary which shows the gross margin realized on parts used in the repair work and the gross gain realized from the services of the mechanics. Cash receipts could either be handled by the implement department or through the general office. The form provides that all cash disbursements be handled through the main office.

This report was prepared each day by the implement department manager. Before its adoption, one of the employees in the repair shop who was responsible for keeping mechanics supplied with parts and materials had been keeping a simple daily record of the labor revenue from each patron and whether it was a cash or credit transaction. Another daily record which the employee keeps is entitled "Purchase of Parts." It contains columns for the requisition number, date, name of firm, discount, and list price of the parts.

CARD NO.

DESCRIPTION

USAS 3565

PART NO.

COST	SERIAL NUMBERS						NUMBER PER CAR	AISLE
LIST	OR MODELS						MAXIMUM	SECTION
SELLING PRICE							MINIMUM	BIN

ORDERS			RECEIPTS				ISSUES					ISSUES				
DATE	AUTHORITY	QUANTITY	DATE	INVOICE	QUANTITY	BALANCE ON ORDER	DATE	AUTHORITY	QUANTITY	TOTAL	BALANCE	DATE	AUTHORITY	QUANTITY	TOTAL	BALANCE
(A day book is used for orders instead of this section.)																

BIN CHECK		SALES RECORD								ANNUAL
DATE	COUNT	MONTHLY								
		JAN.		JUL.						
		FEB.		AUG. (Not used)						
		MAR.		SEP.						
		APR.		OCT.						
		MAY		NOV.						
		JUN.		DEC.						

AISLE	SECTION	BIN	DESCRIPTION	PART NO.

PART NO.	LIST		DESCRIPTION	BIN NO.
	NET			

USED ON NO.	TO NO.	YEARLY PAST SALES IMPORTANT!	19 1ST Q.	2ND Q.	3RD Q.	4TH Q.	19 1ST Q.	2ND Q.	3RD Q.	4TH Q.	19 1ST Q.	2ND Q.	3RD Q.	4TH Q.

RECEIVED & SHIPPED				RECEIVED & SHIPPED				RECEIVED & SHIPPED				RECEIVED & SHIPPED				RECEIVED & SHIPPED			
INV. NO.	REC.	SHIP.	BALANCE	INV. NO.	REC.	SHIP.	BALANCE	INV. NO.	REC.	SHIP.	BALANCE	INV. NO.	REC.	SHIP.	BALANCE	INV. NO.	REC.	SHIP.	BALANCE

LITHO D IN U.S.A.

T-450

ORDERS				INVENTORY											
DATE	NO. ORDERED	NO. REC'D	BAL. ON ORDER	DATE	REC'D	SOLD	BALANCE	DATE	REC'D	SOLD	BALANCE	DATE	REC'D	SOLD	BALANCE

MONTHLY SALES														
YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL	AVE.

Location	SOURCE	MAX.	MIN.	DATE	COST	LIST	SELLING PRICE
Name							
Part.No.							

Form 3. – Examples of perpetual inventory cards used for repair parts by cooperative associations, 1947.

Form 4. - Daily report of repair shop[a]

DATE	TICKET NUMBER	PATRON'S NAME	LABOR REVENUE				PARTS USED[b]				OTHER REVENUE	AMOUNT OF TICKET	
			FROM PATRONS		FROM ASS'N[c]		FOR PATRON WORK		FOR ASS'N WORK				
			HOURS	AMT.	HOURS	AMT.	LIST	COST	LIST	COST		CASH[d]	CHARGE
Total													

SUMMARY

PARTS USED	LIST	COST	MARGIN
For patrons.....			
For association.....			
Total.....			

LABOR	INCOME	COST[e]	MARGIN
From patrons.....			
From association.....			
Total.....			

[a]This form provides for recording data on the revenue from shop labor and parts as though the shop were a separate business exclusive of the implement and parts department. Separate columns are provided for inter-company transactions where the shop reconditions used machinery for the implement department and trucks for other departments.

[b]An inter-company transaction. A separate shop would have to purchase parts at dealers' prices, but since shop is a part of the implement department it is simpler to transfer the parts to the shop at cost and credit the retail sales of them to the shop operations. Also, for simplicity, the parts used on work done for other departments would be billed at cost and charged to the cost of reconditioning used machinery or trucks as the case may be. If new equipment is built in the shop, a separate column could be provided to show the sale of it to patrons or to the implement department and the cost of materials used. If this became an important activity, then, separate "cost of manufacturing" statements would be needed.

[c]An inter-company transaction. It would be charged to the cost of used machinery reconditioned and to the repair expense of trucks overhauled.

[d]Cash disbursements are to be made through the main office or from a "petty cash" fund maintained by the department for paying miscellaneous expenses. Variation may be made in the form to provide other desired information.

[e]To be computed on the basis of wages paid to the mechanics performing each job.

DAILY REPORT OF IMPLEMENT DEPARTMENT INCLUDING PARTS AND SHOP

In view of the fact that separate operating records were not yet kept on the repair shops and only two associations were preparing operating statements on their implement departments, it is probable that a daily report including the entire implement and repair department would be most suitable in the beginning.

The parts manager in the implement department of the Wabash County association was keeping a daily record of this type which provided columns for both cash and credit sales of repair parts and farm machinery, cash paid out, and collections of and additions to accounts receivable. Form 5 illustrates the report used by this association with revisions to give somewhat more detail. This daily report is based upon the tickets for jobs completed for patrons each day and does not cover the total work performed during the day by the mechanics. It, of course, would supplement the existing accounting records of the associations.

OPERATING STATEMENT OF REPAIR SHOP

While it may seem impractical to prepare a separate operating statement on the repair shop until it reaches a size where several men are employed, the question arises each year as to whether the shop is losing money, breaking even, or making savings. For this reason, it would seem advisable for management to consider plans for preparing an operating statement on the repair shop. Form 6 illustrates a suggested operating statement for a repair shop operated as if it were a separate department. Comments regarding inter-company transactions are included in the footnotes of the statement.

Keeping separate records in the implement division for the shop department and the implements and parts department raises some accounting problems particularly from the standpoint of the repair parts used in the shop. First, should the margin realized on the parts used in overhauling a piece of equipment for a farmer be credited to the shop or to the parts department? The shop should probably receive credit for this margin as it would greatly affect the operating results of the shop. It would be simpler to consider the parts used in a repair shop as a sale by the parts department directly to the shop patron. But if the association operated only a repair shop without stocking a line of implements and repair parts, then the shop would receive a considerable amount of revenue from the sale of parts purchased from other dealers for use in its repair work. The Vanderburgh County cooperative association, for example, gives its repair shop credit for discounts on parts purchased from other dealers and on those bought from the parts department of the association.

Second, should the parts department of the cooperative bill the parts which the shop acquires from it at cost or at dealers' prices?

Form 5. - Daily report of implement, repair parts, and shop department[a]

DATE_____ 194__ REPORT NO._____

JOB OR TICKET NUMBER	PATRON'S NAME	DESCRIPTION OF TRANSACTION	SALES						DISCOUNTS GIVEN	SALES TAX	LABOR REVENUE		OTHER REVENUE	ACCOUNTS RECEIVABLE		TOTAL CASH RECEIVED
			NEW IMPL.	USED IMPL.	PARTS DIRECT TO PATRONS		PARTS USED BY SHOP				FROM PATRONS	FROM ASS'N		CHARGES	COLLECTIONS	
					LIST	COST	LIST	COST								
Total																
			A	B	C	D	E	F	G	H	I	J	K	L	M	N

SUMMARY AND PROOF

DEBITS			CREDITS			
Discounts given.....	G	$	Total sales.....	A-F	$	Parts - list..... $
Total cash received.....	N		Sales tax.....	H		Parts - cost..
Charges to accounts			Labor and other revenue.....	IJK		Margin..... $
receivable.....	L		Collections of accounts rec....	M		Labor revenue.... $
Total.....		$	Total.....		$	Labor cost.....
						Margin..... $

[a]Cash disbursements are to be made through the main office, or from a "petty cash" fund maintained by the implement department for paying miscellaneous expenses. Variation may be made in the form to provide other desired information.

_____, 19___ to _____, 19___

	BEGINNING INVENTORY	PURCHASES	ENDING INVENTORY	COST OF SALES	SALES	GROSS MARGIN	PERCENT OF SALES
Parts - to patrons[a]....							
Parts - for ass'n[b].....							
Total.....							

Service revenue:

Labor revenue from patrons_____, from association[c]_____, Total.....	_____	_____
Other revenue (mileage, etc.).....	_____	_____
Total service revenue.....	_____	_____
Total gross margin and service revenue.....	_____	_____

Direct expenses:		Other expenses:			
Labor.....	_____	Implement department exp.			
Payroll tax.....	_____	allocated to shop[d].....	_____		
Shop supplies....	_____	General overhead exp.			
Depreciation.....	_____	allocated to shop[e].....	_____		
Miscellaneous....	_____				
Total.....	_____	Total expenses.....		_____	_____

Net operating savings.....	_____	_____
Other revenue.....	_____	_____
Total net savings.....		

[a]On the basis of crediting shop with the sale and margin on parts used in repair work for patrons.
[b]An inter-company transaction. The parts used on work for the association would probably be billed at cost or at a certain discount to the department and charged to the reconditioning cost of used machinery or trucks as the case may be.
[c]An inter-company transaction.
[d]These include those combined implement department expenses which can not be charged directly to the shop.
[e]After general overhead expenses of the association have been allocated to the implement department, a portion of this amount is then arbitrarily allocated to the repair shop.

Form 6. - Operating statement for repair shop

And third, should the shop receive any margin on parts used in reconditioning used machinery for the implement department or on a truck for the petroleum department? The parts acquired from the association could be billed to the shop at either cost or at dealers' prices so the shop would receive the revenue from parts used for association repair work. This would make the co-op records as comparable to a privately owned shop as possible for accounting purposes. The Vanderburgh County association gives a flat 25 percent discount to its shop for all parts acquired from the parts room. Under such an arrangement the shop would receive this rate of income or margin on parts used in performing repair work for the association.

OPERATING STATEMENT OF IMPLEMENT DEPARTMENT INCLUDING PARTS AND SHOP

Since most county cooperative associations in Indiana handle a wide variety of farm supplies and some perform marketing services, it appears highly desirable that they establish departments for the major types of business such as feed, petroleum products, farm machinery, and marketing. Department heads should be names for each and accounting records set up so that operating statements can be prepared for each department. A number of associations already have such a set-up and many others were planning to adopt it at the beginning of their next fiscal year.

Sales and income of the departments present no accounting problem and all expenses that apply specifically to the departments can be set up as "direct expenses." The remaining "general overhead expenses" including general management, accounting, and advertising, and also "other revenue" are the items which cause the principal difficulty. They would have to be allocated to the various departments on as equitable a basis as possible.

Some items should be allocated according to the time spent or use made by the department, others should be allocated on the basis of the gross margins and service revenue, while for some items the sales volume of the department may be the most satisfactory basis. In any case, once a formula has been determined, comparative statements can be made from year to year on each department even though the actual expenses and net savings of each may not be absolutely accurate.

Form 7 illustrates a suggested operating statement for a combined implement, parts, and shop department. Sales and margins on new and used machinery and repair parts sold direct to farmers and used by the shop are shown separately. Likewise, shop revenue from work for farmers and for the association is itemized separately.

PRODUCTIVE TIME RECORD OF MECHANICS

It is desirable to know what percent of the mechanics' time is producing revenue for the shop. This is calculated by dividing the number of hours worked by the number of hours billed to patrons for any particular period. Another computation might be based on the total hours for which mechanics are paid, including vacations, holidays, and sick leave. While it may not be convenient to figure the number of hours billed to patrons each day because of unfinished jobs, it should be possible to calculate this once a week from information on the job tickets and from the men. A suggested daily record is shown by form 8.

It was generally agreed that at least 75 percent of the mechanic's time must be revenue-bearing or productive if the shop is to break even. A desirable goal was believed to be 85 percent productive time. It was also believed that every effort should be made to have the shop labor revenue of each mechanic equal his salary. On this basis, if a mechanic

_____, 19__ to _____, 19__

	BEGINNING INVENTORY	PURCHASES	ENDING INVENTORY	COST OF SALES	SALES	GROSS MARGIN	PERCENT OF SALES
New machinery.....							
Used machinery.....							
Parts - to patrons[a]....							
Parts - for ass'n[b].....							
Total.....							

Service revenue:		
Labor revenue from patrons_____ from association_____,[b] Total...	_____	_____
Other revenue (mileage, etc.).....	_____	_____
Total service revenue.....	_____	_____

Direct expenses:

Labor.....	_____	Insurance and bonds.....	_____
Payroll taxes.....	_____	Advertising.....	_____
Rent.....	_____	Repairs.....	_____
Property taxes.....	_____	Truck expenses.....	_____
Depreciation.....	_____	Other travel.....	_____
Heat, light, power.....	_____	Supplies, postage.....	_____
Gross income taxes.....	_____	Shop materials.....	_____
Telephone and telegraph..	_____	Miscellaneous.....	_____
Discounts given.....	_____	Total.....	_____

General overhead expenses (allocated)[c].....	_____	_____
Total expenses.....	_____	_____
Net operating savings.....	_____	_____
Other revenue (wholesale refund, etc.).....	_____	_____
Total net savings.....		

[a]Includes parts sold direct to patrons by parts department and those used by shop in work for patrons.
[b]Inter-company transactions. See form 6 and footnotes.
[c]Based upon an arbitrary allocation.

Form 7. - Operating statement for implement department (including repair parts and repair shop)

is employed to work 44 hours a week at $1.25 an hour and the charges are $1.75 an hour for repair work, he would have to have 31-1/2 hours billed to patrons, or 70 percent productive time, if the revenue is to equal his salary.

None of the shops were keeping such records on their men but one mechanic said that he ordinarily was able to charge patrons for only about 7 hours out of 9 worked each day, or 78 percent of his time. Another association, where mechanics rebuilt motors when not repairing patrons' equipment, stated that mechanics had 90 to 95 percent productive time under such conditions.

DATE 1947	MECHANIC'S NAME OR NO.	HOURS WORKED	HOURS ON VACATION AND HOLIDAYS	HOURS SICK	TOTAL HOURS TO ACCOUNT FOR[a]	HOURS BILLED TO PATRONS	PERCENT PRODUCTIVE TIME	
							OF HOURS WORKED	OF TOTAL HOURS
3/1	Jones	8	0	0	8	6	75	75
	Smith	6	0	2	8	5	83-1/3	62½
	Brown	0	8	0	8	0	0	0
3/2								
Weekly total.....								
	Jones							
	Smith							
	Brown							

[a]Includes the number of hours per day for which mechanics are being paid.

Form 8. - Daily report of productive time of mechanics

Only one association surveyed was using a time clock to determine the hours worked each day by all employees, but it was not used in keeping track of the time spent on each repair job by the mechanics. Several managers, however, favored the use of time clocks when their shop operations reaches a larger size.

An interview with the operator of a private welding and machine shop employing 8 men indicated that he was enthusiastic about time clocks. The cost of the clock and 1,000 cards was $125. Each patron must have a card for every job. A white "productive" card is taken by the patron to the employee who checks or punches it when he starts on the job. Thereafter he is on the time of the patron until the work is completed. If he has to stop work for any reason he checks a red "non-productive" card. An employee can make adjustments of 5 or 10 minutes or more at the end of the job if he has visited with the patron or has been interrupted for some other reason. The welding rate of this shop was 5 cents a minute or $3 an hour.

The productive cards are totaled every week and then classified and filed according to type of job. They serve as a good reference for estimating costs of future jobs. Since adoption of this system, the owner stated that patrons did not bother mechanics very much because this would increase the cost of the work. Furthermore, employees became more particular about having good tools and keeping them in good condition and in their right place to avoid complaints from patrons about paying for time employees spend in hunting their tools.

OTHER SHOP RECORDS

Other information which may be compiled from the job tickets is a daily report of the number and main types of repair jobs performed. A suggested daily record is illustrated by form 9. The implements repaired could be further classified as to type if desired. The Wabash County cooperative association kept an alphabetical index of its implement, repair parts, and shop patrons which showed the dates and classification of sales and repair services rendered.

DATE	TRACTORS		COMBINES REPAIRED	CORN PICKERS REPAIRED	OTHER IMPLEMENTS REPAIRED	TRUCKS		CARS	
	OVERHAULED	MINOR REPAIRS MADE				OVERHAULED	MINOR REPAIRS MADE	OVERHAULED	MINOR REPAIRS MADE
Total..									

Form 9. - Number and types of repair jobs completed each day

SHOP POLICIES AND PRACTICES

Out of the experiences of these cooperative repair shops, several sound operating practices have been worked out in addition to those relating to facilities, service rates, personnel and operating records. Comments on them follow.

SHOP ORGANIZATION

The farm machinery repair shop in all associations except one was a part of the implement department and under the general supervision of its manager. It was the general practice to have the shop under the direct supervision of a shop foreman who was also the head mechanic. It was his responsibility to direct the work of the mechanics and keep them busy and also to line up work and book jobs.

Following are brief comments upon the organization set-up of the largest shops:

The Noble County association emphasized the importance of having a shop foreman whose duties were those mentioned above. The implement department manager was responsible for securing the parts and materials needed

by the shop. The general manager stated that after this plan was adopted on July 1, 1946, the revenue of the shop averaged $800-$1,000 a month compared with $600 a month before its adoption. As a result, labor income is now paying the salaries of the mechanics.

The Wabash County association has a full-time parts manager whose duties also include booking repair work for the shop. The head mechanic is the shop foreman and supervises the work of the other mechanics. The Jackson County association has a parts manager to handle the stock room and a shop foreman who is the head mechanic. In the Elkhart County association the shop foreman also helps the implement manager on parts and machinery.

The repair shop of the Vanderburgh County association is not under the direction of the implement department head but is supervised by the shop foreman who is the head mechanic. One man in the shop is responsible for supplying the mechanics with the parts needed and his salary is charged against the discounts received on parts used. He also helps with service work in the shop, and in such cases the time he charges for is credited to the mechanics' revenue. This "parts-handy man" also handles booking jobs, job tickets, and keeps a daily record of shop operations. The head of the implement department supervises the distribution of new and used machinery and a large stock of repair parts. Both the shop and the implement department make out sales tickets and receive money from the sale of parts and service and from collections of accounts. Receipts are turned into the office daily. Each has a $10 petty cash fund. All employees are bonded.

Poor management and bad organization were main reasons for the unsuccessful operation of the repair shop of one county association. It was reported that general supervision of the implement department and shop was inadequate. Responsibilities and duties were not delegated properly thus resulting in poor organization and operation.

It was the opinion of county association general managers that a repair shop should be owned by the cooperative association rather than by individuals who pay a commission or rental to the association. Also, they were not in favor of operating a shop on a partnership basis with individuals or with the State wholesale association.

TYPES OF SERVICES

As mentioned, it was the general practice of the shops to perform all types of general repair and overhauling work on tractors and farm implements, but not to perform specialized work such as reboring motors and grinding crankshafts. Most shops also limited their repair work to farm machinery with the exception of overhauling the trucks owned by the cooperative. Those shops which did repair work on farmers' trucks and cars always gave priority to farm machinery work.

It was the policy of most associations to establish a separate shop under the direction of the "farm modernization" department for repairing

and servicing miscellaneous farm and home equipment such as water systems, milking machines, and electrical equipment. Until such a department was established, however, this equipment was usually serviced by one of the men in the machinery shop assigned to this type of work.

QUALITY OF WORK AND INTEGRITY OF MECHANICS

A basic policy of the cooperative repair shops was to render high quality repair services. They tried to obtain skilled mechanics who could do superior work. Farmer patrons who are the owners of these shops expect their mechanics to do what needs to be done to put their machines back in tip-top shape - not just as little as they can get by with. Mechanics emphasized the value of giving good service and of not doing patchwork. One manager believed that they should educate farmers on service; that the shop should go all the way - not just have one mechanic; and that mechanics should not make extra repairs without first consulting the patron.

Furthermore, these cooperative shops stressed the importance of mechanics being honest with patrons in giving them the facts about the condition of their machines. One manager stated that if the mechanic could not do a job he told the farmer. It is the policy of his shop to put out work that it can stand behind. Doing unnecessary work, selling unneeded parts, charging for time not actually put in on each job, and other sharp practices were not tolerated.

Farmers especially desire such attributes as honesty, fairness, trustworthiness, and dependability in mechanics who are to work on their high-priced equipment. They expect mechanics to treat everyone alike. Confidence in the integrity of a mechanic as well as in his knowledge and ability is an important essential in successful repair shop operation.

COMPETITIVE RATES, NET SAVINGS, AND PATRONAGE REFUNDS

Most associations kept their repair service rates in line with those charged by other implement firms that operated repair shops. The rates of the cooperatives, however, generally were substantially less than those charged by garages and machine shops in their area. It was the feeling of most managers that the repair shops would never realize very large net savings and patronage refunds. They believed that their value exists mainly in performing high quality service at a reasonable cost as reflected in current shop rates. They did believe, however, that the shop should stand on its own feet financially and show a reasonable net saving.

It was the practice of 9 of the 11 associations to pay a patronage refund on shop labor charges. The rate was the same as that on implements and parts which in turn was generally the same rate as that declared on all farm supplies. Patronage refunds of the associations during the last 2 years have ranged between 4 and 8 percent for each dollar of business.

USE OF SHOP BY FARMERS

Most shops did not permit farmers to tear down their tractors or perform certain repair work on their machinery in the repair shop. All discouraged the practice. One charged an hourly rental for use of its shop facilities. Another loaned tools to individuals in emergency cases.

During days of slack farm work, shop employees complained that a few farmers tended to visit in the shop - often taking up the time of the mechanics or getting in their way. None of the associations, however, attempted to keep farmers who were not having work done out of the shop. They realized that farmers are interested in machinery and that they can learn from observation and discussion with mechanics many points on better care of farm equipment. Also, it was pointed out that the shop employees can help the implement department in selling new machinery by explaining the merits and operation of various machines brought in for repair.

SAFETY PRECAUTIONS

Shop foremen pointed out the importance of properly protecting equipment and of training employees in use and care of tools to avoid accidents. Welders were required to wear masks and goggles; the public was not permitted to use the grinders; and mechanics were urged to take proper precautions in sharpening tools, setting wrenches, using hammers, removing mushroomed heads on chisels, using proper size screw drivers, using files without handles, protecting vice jaws when using heat, and in properly caring for precision tools.

Fire protection in the shops also was stressed. The principal suggestions made for fire prevention were to keep a clean shop, try to enforce the "no smoking" rule; educate employees as to chief causes of fire such as inflammable liquids, oily rags, and electric welders and torches; know the different kinds of fires and those which cannot be put out with water; equip the shop with fire fighting equipment; see that the shop is inspected regularly; and train employees how to fight fire.

CREDIT POLICY

It was the general policy to operate the repair shops and parts departments on a cash basis. Some associations, however, extended limited credit on repairs and service work for a short time depending upon the individual and the size of the repair bill.

Credit for financing purchase of farm machinery parts, repair bills, and other production expenses was available to farmers from local production credit associations. Also, there were large active Farm Bureau credit unions in at least 5 of the counties visited. In the past, approximately one-third of their loans have been on tractors and other farm implements - much of which was purchased from the cooperative associations. The credit unions, however, have not been used to any great extent in financing farm machinery repair expenditures.

CENTRAL SHOP IN COUNTY

Most associations believed that a satisfactory repair service on farm machinery could be given from one central shop in the county. Most counties were small enough for farmers to easily bring in their machines or the shop could send a mechanic to the farm within a relatively short time. In the case of Clay County, however, which is long and narrow with the headquarters of the cooperative near one end and a branch near the other end, it probably will be desirable to eventually establish shops at each place. At present the shop is located at the branch station.

MISCELLANEOUS

The Wabash County association shop uses a large blackboard in booking repair jobs. On it is listed the farmer's name, date that the machine was brought in, date promised, kind of implement, and work to be performed. This showed the number and the order of jobs to be done and let farmers see that no one was being taken in ahead of his turn.

ASSISTANCE BY THE INDIANA FARM BUREAU COOPERATIVE ASSOCIATION, INC.

A high degree of cooperation exists between the Indiana Farm Bureau Cooperative Association, Inc., and the county cooperative associations in developing and conducting farm machinery and repair service programs. Following are the principal ways in which the implement department of the State association helps with the repair services:

1. Encourages directors and managers to install repair shops and helps plan them.

2. Locates new or used equipment and supplies it at cost to the local repair shops. It also helped get priorities and permits for new equipment needed by the shops during the war.

3. Helps to locate mechanics for the local associations.

4. Gives suggestions and advice on sound operating practices and policies.

5. Tries to find the best sources of supply for repair parts and accessories.

6. Supplied information on various wartime regulations pertaining to machinery repair parts, service charges, price ceiling, wage and hour regulations, and similar items.

7. Holds State and district training schools for mechanics, shop foremen, implement department managers, and general managers.

8. Sends mechanics to county cooperatives to instruct and train their local mechanics.

9. Helps hold machinery maintenance and repair schools for farmers throughout the State.

10. Aids in other types of educational work with farmers on the care and maintenance of farm equipment.

The county associations indicated appreciation for the help given by the State organization and wanted it to be continued. Only a few suggestions were offered for improving the service. One manager thought that the State Implement Department might write a short column in the "Farm News" - a paper published cooperatively by most of the county associations - on timely items concerning the care and maintenance of farm machinery. Managers recommended that the State association discourage county cooperatives from starting repair shops until suitable mechanics and satisfactory shop facilities could be obtained. Others believed the State association would be in a better position to advise county cooperatives on operating policies and problems if more detailed records were kept by the counties on their implement and shop operations.

As mentioned, much progress has been made by the State association in developing a training program for implement and shop employees of county associations. The scheduling of seasonal schools on a district basis is considered a decided improvement over the State-wide schools at Indianapolis of a week's duration.

The implement department of the State association is now in a much better position to serve county associations than it was 4 years ago. It has acquired considerable warehouse, display, and office space in the new warehouse of the organization. It has a large new repair shop which employs three mechanics plus one painter who also receives and checks machinery. The number of fieldmen has increased from one to three, and an assistant manager for the department has been employed. The warehouse force now consists of a manager and a man in charge of each of the following: Parts called for, parts shipped, receiving and checking, and inventory and reports. One other employee also works on inventory and parts.